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PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA

# REPORT OF THE PREPARATORY COMMISSION, UNDER PARAGRAPH 11 OF RESOLUTION I OF THE THIRD UNITED NATIONS CONFERENCE ON THE LAW OF THE SEA, ON ALL MATTERS WITHIN ITS MANDATE, EXCEPT AS PROVIDED IN PARAGRAPH 10, FOR PRESENTATION TO THE ASSEMBLY OF THE INTERNATIONAL SEABED AUTHORITY AT ITS FIRST SESSION

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(LOS/PCN/BUR/R.48 and Corr.1 (Russian only))

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# PART 1

## FINAL REPORT OF THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

(LOS/PCN/BUR/R/48)

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## LETTER OF TRANSMITTAL

Dear Mr. Chairman,

In accordance with paragraph 3.1.2 of the Draft Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme (LOS/PCN/SCN.2/L.6/Rev.1), we, the members of the Training Panel, met four times on 1, 2 and 5 August 1994 in New York, to, *inter alia*, approve the final report of the Training Panel to the General Committee of the Preparatory Commission.

In the absence of the Chairman, Mr. Baïdy Diène (Senegal), for the first part of the meeting, Mr. Samuel Sona Betah, in place of the expert from Cameroon, Mr. Nkwelle Ekaney, served as Acting Chairman.

The Training Panel adopted its final report for submission to the General Committee.

While our work on training is now finished with the submission of this report, we would like nevertheless to emphasize that this does not imply that we have been able to discharge our mandate. There are some outstanding issues which require consideration by the International Seabed Authority.

We would like to thank you and the Preparatory Commission for having had the opportunity to assist in the implementation of the obligations of the registered pioneer investors.

Yours sincerely,
*Signed* in New York, on 5 August 1994

Jung-Ho AHN
(Republic of Korea)

Baïdy DIENE
(Senegal)

Ivan GLOUMOV
(Russian Federation)

H.E. José Luis Jesus
Chairman of the Preparatory Commission
for the International Seabed Authority
and for the International Tribunal for
the Law of the Sea
New York

/...

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(Cameroon)

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(Brazil)

Tauquir Hussain NAQVI
(Pakistan)

Bhimsen RAO
(India)

Saleh TAYEB
(Saudi Arabia)

Lennox BALLAH
(ex officio member of the Training Panel)

Arne BJORLYKKE
(Norway) - absent

Marco FLUCKIGER
(Chile) - absent

Peter HALBACH
(Germany) - absent

/...

Francisco NULLO
(Argentina) - absent

Mohamed SADIQUI
(Morocco) - absent

Augustin TCHOTA
(Togo) - absent

Aberrahman TOUHAMI
(Tunisia) - absent

Leopold WEBER
(Austria) - absent

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## INTRODUCTION

1. The present report is submitted to the General Committee of the Preparatory Commission for its consideration and inclusion in the final report of the Preparatory Commission to be presented to the International Seabed Authority (hereinafter referred to as "the Authority") at its first session. Since the Panel's mandate will not have been discharged at the time of entry into force of the United Nations Convention on the Law of the Sea on 16 November 1994, it is hoped that the final report and in particular the recommendations contained therein will assist the Authority in following up the work on training.

2. A first draft of the report was prepared by the Secretariat pursuant to a request by the members of the Panel at its fifth meeting in February 1994. It was then circulated inter-sessionally for comments to all members of the Panel. The draft report has been updated to reflect the developments that took place at the sixth meeting of the Panel. The current report was presented to and approved by the members of the Panel at its sixth meeting on 5 August 1994.

3. The present report contains a detailed account of what the Training Panel has been able to accomplish in the area of training and what remains outstanding. It is divided into three chapters: chapter I contains a brief history of the Preparatory Commission Training Programme, as well as an examination of some of its main provisions leading to the establishment of the Panel; chapter II deals with the mandate and accomplishments of the Panel; chapter III contains the recommendations of the Panel to the General Committee with regard to those issues which will be outstanding at the time of entry into force of the United Nations Convention on the Law of the Sea and in the Panel's view require consideration by the Authority. In the interest of comprehensiveness and to facilitate future referencing, some of the documents submitted to the Training Panel, as well as all of the reports and other documents of the Panel which were submitted to the General Committee, will be annexed to the final report of the Preparatory Commission.

## I. THE PREPARATORY COMMISSION TRAINING PROGRAMME

4. Resolution II of the Third United Nations Conference on the Law of the Sea provides, in paragraph 12, that:

> "In order to ensure that the Enterprise is able to carry out activities in the Area in such a manner as to keep pace with States and other entities:
>
> "(a) every registered pioneer investor shall:
>
> ...
>
> (ii) provide training at all levels for personnel designated by the Commission".

5. The Special Commission for the Enterprise, Special Commission 2, was established in accordance with paragraph 8 of resolution I of the Third United Nations Conference on the Law of the Sea and was entrusted with the functions referred to in paragraph 12 of resolution II. Its mandate was also to take all measures necessary for the early entry into effective operation of the Enterprise.

6. Training was the subject of intensive study and detailed discussion in Special Commission 2. The Commission stressed the importance of developing a close cooperative relationship between the Preparatory Commission and the registered pioneer investors and the need to develop a mechanism through which the registered pioneer investors could fulfil their training obligations. In view of the forthcoming registration of the first four pioneer investors, the Commission decided, at the fifth session of the Preparatory Commission (Kingston, 30 March-16 April 1987), to set up an Ad Hoc Working Group on Training to draft principles, policies, guidelines and procedures for a training programme in implementation of paragraph 12 (a) (ii) of resolution II. That group was open-ended, with a core membership of the first four applicants (France, India, Japan and the Union of Soviet Socialist Republics), and 12 other representatives, namely, Bangladesh, Canada, China, Colombia, Italy, Jamaica, Kenya, Malta, Tunisia, provisionally Denmark, the United Nations Council for Namibia and a representative from the International Ocean Institute. 1/

7. Following the registration of India on 17 August 1987, and France, Japan and the USSR on 17 December 1987, the Chairman of the Preparatory Commission during the course of the sixth session of the Preparatory Commission (14 March-8 April 1988) undertook consultations on the modalities of the implementation of the obligations of the registered pioneer investors and their certifying States. An informal consultative group was formed to deal with these issues, which related, inter alia, to the training of personnel under paragraph 12 (a) (ii) of resolution II. The consultations continued until August 1990.

8. The Ad Hoc Working Group on Training concluded its work at the seventh session of the Preparatory Commission (Kingston, 27 February-23 March 1989) when it transmitted two papers, one containing the draft principles and policies for the training programme (LOS/PCN/SCN.2/1988/CRP.3), and the other the draft guidelines and procedures (LOS/PCN/SCN.2/1989/CRP.4). 2/ Those two papers were then merged and submitted to the Special Commission (LOS/PCN/SCN.2/L.6), which with some drafting changes adopted the principles, policies, guidelines and procedures for a Preparatory Commission Training Programme, contained in document LOS/PCN/SCN.2/L.6/Rev.1 (see annex I) at the summer meeting of the Preparatory Commission, New York, from 14 August to 1 September 1989. 3/

9. The first preambular paragraph of the Training Programme states that the Programme is established for the interim period and is to be carried out in the context of pioneer activities as defined in paragraph 1 (b) of resolution II. In accordance with the principle in paragraph 1.1 of the Programme, training must be planned and carried out in close cooperation between the registered pioneer investors and, as appropriate, the certifying States on the one hand and the Preparatory Commission on the other. The Training Panel is

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the cooperative mechanism proposed for the implementation of the Programme (para. 2.1).

10. The policies of the Training Programme are anchored in pioneer activities. Training is to be provided in all the different disciplines and skills required by the future Enterprise, to the same extent and level that these disciplines and skills are practised by the registered pioneer investors (para. 2.2). The Programme will incorporate, as and when appropriate, both general and specialized training, and both theoretical and practical training. The training methods and facilities used by each registered pioneer investor, including those with a technical component, should be the best available to it. Where training or a component of the training provided is to be undertaken in universities or research institutions, these must be widely recognized in the country concerned (para. 2.3). The Programme will give initial priority to training in surveying and exploration, and assessment of the results thereof (para. 2.4).

11. The issues of costs and timing of the Training Programme are provided for in paragraphs 2.5 and 2.6. It is stated that the Programme will aim at maximum cost-effectiveness. Its implementation will be scheduled in such a way as to maximize the value and timeliness of the knowledge and experience gained by the trainees relative to the date of establishment of the Enterprise. Pioneer investors will, after their registration and at set intervals thereafter, advise the Preparatory Commission of the training opportunities arising out of their pioneer activities. They will also advise the Preparatory Commission of the financial implications of their proposed training schedules.

12. In the selection of candidates the need to ensure the highest possible standards and equitable geographical distribution will be borne in mind. As appropriate, designated trainees may undergo more than one period of training and may also receive training from more than one registered pioneer investor (para. 2.8). Registered pioneer investors will submit to the Preparatory Commission reports on each person trained, including a full description of the training provided and the context in which it was carried out (para. 2.10). The Programme asks Governments whose trainees are their nationals to cooperate in making trained persons available to work for the Enterprise, at its request, and also to make their services available to the Preparatory Commission itself should it so request (para. 2.11).

13. The Training Programme gives the Training Panel the responsibility of recommending to the Preparatory Commission measures to be taken pursuant to the principles and policies mentioned above (para. 3.1.1). The work of the Panel is thus central to the whole process envisaged in the Training Programme. Its functions are contained in paragraph 3.1.3 of the Programme and are discussed in greater detail below.

14. The conditions and requirements of traineeships and the administrative arrangements for the trainees are specified in paragraphs 3.3 and 3.4 of the Training Programme.

15. The Plenary of the Preparatory Commission adopted the Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme on 31 August 1989. 4/ It also took note of the report of the Group of Technical

/...

Experts, which met on 15 and 16 August 1989, pursuant to a request by the Preparatory Commission to assist in matters relating to the training of personnel, taking into account the work done by the Ad Hoc Working Group on Training. In its report to the General Committee of the Preparatory Commission (LOS/PCN/BUR/R.6, see annex I), the Group of Experts stated that it could not determine the number of trainees and the duration of training in each discipline on the basis of the information made available to it by the Preparatory Commission. It was of the view that it could best assist the Preparatory Commission by identifying the priority disciplines for training, the skills required of each trainee and the areas of training in preparation for deep seabed mining. With particular emphasis on exploration, the Group identified the priority disciplines and skills that would be required during the research-and-development period. For the priority disciplines, the Group itemized the specific skills relevant to the period. The skills included academic requirements, the need for prior work experience and specialized areas of knowledge. As regards training, the Group identified the important areas for supplemental or specialized training. They were identified as areas where the capabilities of persons already having a strong educational foundation and work experience should be enhanced in order to apply their discipline effectively to seabed resources.

16. At the eighth session of the Preparatory Commission (Kingston, 5-30 March 1990), Special Commission 2 proceeded to examine ways and means of expediting the implementation of the Training Programme, bearing in mind particularly the various administrative and time-consuming steps required for its initiation. Its recommendations on the subject are contained in document LOS/PCN/SCN.2/L.7 (see annex I) and relate, inter alia, to suggested elements for inclusion in the draft note verbale to be circulated to member and observer Governments of the Preparatory Commission inviting nominations for the available traineeships. For example, it was proposed that "the Note should ask for a postgraduate degree in science from a university or a graduate degree in engineering; as to experience, at least two years of actual work in the relevant field; and as to age, the nominees should be between 25 and 35 years of age, in exceptional cases no older than 40."

17. Special Commission 2 also recommended that the Secretariat make inquiries with technologically advanced States that were not registered pioneer investors about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments.

18. With the adoption of document LOS/PCN/SCN.2/L.7 by the Plenary on 30 March 1990, 5/ the work of Special Commission 2 on the Training Programme was completed. Implementation of the Programme now awaited the conclusion of the consultations on the implementation of the obligations of the registered pioneer investors.

19. On 30 August 1990, at its summer meeting in New York (13-31 August 1990), the Preparatory Commission adopted the Understanding on the Fulfilment of Obligations by the Registered Pioneer Investors and their Certifying States. 6/ The Understanding applied to the four registered pioneer investors, namely the Government of the Republic of India, the Institut Français de Recherche pour

l'Exploitation de la Mer (IFREMER), the Deep Ocean Resources Development Co. Ltd. (DORD) and the Soviet State enterprise Yuzhmorgeologiya, and to their respective certifying States, namely, India, France, Japan and the Union of Soviet Socialist Republics. Paragraph 2 of the Understanding states that:

> "The four pioneer investors shall provide training pursuant to paragraph 12 (a) (ii) of resolution II in conformity with the specific programme for training approved by the Preparatory Commission in accordance with the Principles, Policies and Guidelines contained in documents LOS/PCN/SCN.2/L.6/Rev.1 and LOS/PCN/SCN.2/L.7 and taking into account the report contained in document LOS/PCN/BUR/R.6. It is agreed that the cost of such training shall be borne by the four registered pioneer investors and shall be free of cost to the Preparatory Commission. The precise number of trainees, the duration and the fields of training shall be agreed upon between the Preparatory Commission and each registered pioneer investor according to its capabilities. It is further agreed that the first group of trainees shall consist of no less than 12 individuals."

## II. THE TRAINING PANEL

### A. Composition

20. At the ninth session of the Preparatory Commission (Kingston, 25 February-22 March 1991), the Chairman of the Preparatory Commission undertook a series of consultations with the Chairmen of the regional groups on the composition of the Training Panel. Paragraph 3.1.2 of the Training Programme provides that:

> "The Panel will consist of 15 members who are experts in appropriate fields. The composition of the Panel will be determined by the Preparatory Commission and revised as required. The Training Panel will meet during the meetings of the Preparatory Commission, unless the Commission decides otherwise."

21. In step 1, paragraph (a), of document LOS/PCN/SCN.2/L.7 (see annex I), Special Commission 2 had considered it advisable to specify clearly that the meetings of the Panel would take place during a session of the Preparatory Commission, thus incurring no extra cost, since Panel members would be attached to the delegations involved.

22. The consultations of the Chairman of the Preparatory Commission resulted in an agreement to modify the guidelines as regards the composition of the Panel. There would be 21 members: 16 would be selected on the principle of equitable geographical distribution and each registered pioneer investor would be represented by one expert. The Chairman selected the 21 members from the nominees submitted by States. The regional distribution of the 16 members was as follows: 5 from Africa; 4 from Asia; 3 from Latin America and the Caribbean; 3 from Western Europe and 1 from Eastern Europe. 7/ At the 63rd meeting of the Plenary of the Preparatory Commission, the membership of the Panel was increased to 22, following the appointment of Mr. Lennox Ballah, in his capacity as Chairman of Special Commission 2, as an ex-officio member of the Training Panel. 8/

## B. Chairmanship and meetings

23. At its first meeting, held in August 1991, the Training Panel elected Mr. Baïdy Diène of Senegal as its Chairman. At its fifth and sixth meetings, held in February and August 1994, respectively, Mr. Samuel Sona Betah, in place of the expert from Cameroon, Mr. Nkwelle Ekaney, served as Acting Chairman, since Mr. Diène was not able to attend the meeting.

24. The Training Panel held a total of six meetings. It met four times during the first meeting, held from 19 to 21 August 1991, during the summer session of the Preparatory Commission (New York, 12-30 August 1991); seven times during the second meeting, held from 25 to 28 February 1992, during the tenth session of the Preparatory Commission (Kingston, 24 February-13 March 1992); nine times during the third meeting, held from 10 to 14 August 1992, during the summer meeting of the Preparatory Commission (New York, 10-21 August 1992); eight times during the fourth meeting, held from 22 to 26 March 1993, during the eleventh session of the Preparatory Commission (Kingston, 22 March-2 April 1993); five times during the fifth meeting, held from 7 to 9 February 1994, during the twelfth session of the Preparatory Commission (Kingston, 7-11 February 1994); and four times during the sixth meeting, held on 1, 2 and 5 August 1994, during the summer meeting of the Preparatory Commission (1-12 August 1994). The reports submitted by the Panel to the General Committee of the Preparatory Commission at the end of each meeting are contained in documents LOS/PCN/BUR/R.9, R.15, R.17, R.29, R.37, and R.47, respectively (see annex III).

25. The Panel held only one meeting in 1993, since the Preparatory Commission did not hold its summer meeting. When the report of the fourth meeting of the Panel was submitted to the General Committee, the Committee was not able to reach a conclusion on the question of whether the Panel should meet a second time in 1993 independently of the Preparatory Commission. It was decided that the Chairman of the Preparatory Commission would consult "by telephone or facsimile with the delegations concerned in order to enable the Training Panel to meet at an appropriate time". 9/ Those consultations resulted in a decision not to hold a meeting of the Panel independently of a meeting of the Preparatory Commission, because of the financial implications.

## C. Mandate

26. The functions of the Training Panel are contained in paragraph 3.1.3 of the Training Programme, where it is stated that the Training Panel will:

"(a) Establish a training schedule based on information furnished by the registered pioneer investors in accordance with the policy set forth in paragraph 2.6, bearing in mind particularly the initial manpower requirements of the Enterprise;

"(b) Formulate the individual traineeships to be offered, including their objectives, a description of the training, eligibility requirements and their duration and location, as well as other requirements that may be attached to a particular traineeship;

/...

"(c) Open a register incorporating all the necessary information on the traineeships being offered under the current schedule;

"(d) Make a selection from the nominees entered in the Register and recommend them to the Preparatory Commission for designation in respect of the available traineeships;

"(e) Establish a standard format for the preparation of performance reports to be prepared pursuant to the policy set forth in paragraph 2.10;

"(f) Evaluate performance reports in the event that designated persons are selected for further training;

"(g) Prepare for the Preparatory Commission training certificates attesting to the completion of a traineeship and to the nature of the training given;

"(h) Keep the Programme under review particularly with respect to established priorities, scheduling and financial implications, taking account also of the experience gained by both registered pioneer investors and trainees;

"(i) Submit an annual progress report to the Preparatory Commission on the training provided, including information on all expenditures made under the Programme;

"(j) Establish procedures as may be required for the administration of the Programme;

"(k) Receive information and advice from Governments or institutions on relevant training provided by means of seminars and other forms of group training and inform the Preparatory Commission thereof."

27. Paragraph 3.1.4 of the Training Programme makes provision for administrative and support services to the Panel by the United Nations Division for Ocean Affairs and the Law of the Sea. These services include the circulation of notices to Governments inviting nominations against the available traineeships (para. 3.2.1), the processing of candidatures and, on behalf of the Preparatory Commission and the future Enterprise, the maintenance of personnel records on trainees.

### 1. Recommendations made and criteria established by the Panel

28. In the performance of its functions, the Panel has: (a) made recommendations with regard to the desired content and form of the training programmes of the registered pioneer investors; (b) established eligibility requirements for applicants and made recommendations on other elements for inclusion in the note verbale; (c) established criteria for the selection of candidates for the training programmes; (d) established criteria for the issuance of training certificates and made recommendations on their content and

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form; and (e) made recommendations with regard to the form of the progress reports on the implementation of the training programmes by the registered pioneer investors.

### (a) Content and form of the training programmes

29. The Panel recommended that the traineeships to be offered under the training programmes of the registered pioneer investors should cover all the disciplines identified by the Group of Technical Experts in document LOS/PCN/BUR/R.6 (see annex I). On the question of whether or not the content of the training programmes should be limited to polymetallic nodules, the Panel was generally of the view that consideration of other marine minerals in the traineeships being offered could only be done in a cursory manner and would therefore not be very useful. Other marine minerals could be touched upon in the course of dealing with the resources of the Area.

30. The Panel generally accepted the need for uniformity in all programmes, taking into account the facilities that were available in the country of the registered pioneer investor and the disciplines that each registered pioneer investor was prepared to provide training in. Registered pioneer investors were requested to present clear profiles for the traineeships offered under their programmes, which would state the capabilities the trainees would acquire after successfully completing the training.

### (b) Eligibility requirements and other elements for inclusion in the note verbale

31. On the question of what countries should be entitled to nominate candidates for the training programmes, the Training Panel decided that, in accordance with the recommendation of Special Commission 2 in step 1, paragraph (b), of document LOS/PCN/SCN.2/L.7 (see annex I), a note verbale would be circulated by the Secretary-General of the United Nations to member and observer Governments of the Preparatory Commission. At the eleventh session of the Preparatory Commission (Kingston, 22 March-2 April 1993), the General Committee reaffirmed the decision to invite any State member or observer in the Preparatory Commission to submit candidates for the training programme. However, it recommended that in the process of selection of trainees, the Training Panel should give priority to candidates presented by States members of the Preparatory Commission. 10/

32. The Panel decided that the recommendation of Special Commission 2 contained in step 1, paragraph (b) (i), of document LOS/PCN/SCN.2/L.7, that "Governments should be asked to propose one nominee and one alternate" required some clarification so as to remove any doubts that if a candidate from a particular country was selected and was unable to attend a particular course, the alternate would not automatically qualify for the position. It decided that the reference in the note verbale should be to two persons and not to a nominee and an alternate.

33. On the question of what minimum qualifications of applicants the note verbale should ask for, the Panel established criteria in the following areas: education, experience, age, state of the applicant's health, language and

reasons for seeking training. With regard to educational requirements, the Training Panel endorsed the recommendation of Special Commission 2 in document LOS/PCN/SCN.2/L.7 (see para. 16 above), namely that applicants must possess either a postgraduate degree in science, a degree in engineering or a recognized diploma to take into account different systems of education. It also recommended that applicants must possess at least two years of technical experience in the relevant field. For applicants with a doctorate in science or engineering, the Panel was of the view that research work conducted by those applicants to fulfil the requirements for the doctorate could be substituted for the two-year experience requirement.

34. Taking into account the recommendation of Special Commission 2 in document LOS/PCN/SCN.2/L.7 that nominees should be between 25 and 35 years of age, and in exceptional cases no older than 40 (see para. 16 above), the Panel decided that there was no need to specify the minimum age, as most applicants who had obtained a master's degree and had the minimum two years of experience would qualify. It considered it preferable to recommend a maximum age of 40 years for applicants.

35. As concerns the language in which training would be conducted, it was pointed out that, increasingly, English had become the world's scientific and technical language. However, the Panel agreed that candidates for the training programme offered by France should have a sound knowledge of both written and spoken French.

36. As regards the candidate's physical and mental health, the Panel was of the view that some flexibility must be allowed the candidate and the host country. It recommended that the condition of the candidate's health should be certified by a local doctor, preferably identified through the host country's consulate in the candidate's country of origin. It was also recommended that, since each host country had its own entry and residence requirements, notices announcing the training programmes had to make it clear that candidates should meet the requirements of the host country concerned.

37. The Panel further recommended that applicants should indicate in a brief explanatory note how the training programme would benefit their career, and the nominating Government should also be requested to furnish a brief explanatory note indicating how the expert services acquired as a result of the training programme would benefit the State.

### (c) Criteria for the selection of candidates

38. The Panel decided that candidates would be selected on the basis of the same criteria it had established for the minimum qualifications of applicants. In the first stage of the selection process, candidates would be preselected on the basis of academic qualifications, age and language, and then in the second stage, the Panel would focus on the other criteria, namely professional experience, reasons for seeking training and how the training would benefit the nominating Governments. Having selected the most qualified applicant for each traineeship, the Panel would then look at their geographical distribution, bearing in mind the need to give priority to candidates from developing countries.

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39. The Panel decided that persons who were not selected for the training programmes for which they had applied would not be automatically considered for the next programmes unless they met the minimum criteria and their files were resubmitted.

(d) Training certificates

40. The Panel agreed that before it could recommend to the Preparatory Commission the issuance of a training certificate to a trainee, which would certify that the training had been carried out in conformity with the training programmes of the registered pioneer investors that had been approved by the Panel, it would need to carry out an evaluation of the training on the basis of the report to be submitted by the trainee upon completion of the training programme and the report of the registered pioneer investor on the trainee. The reports should therefore detail what training had been received since they constituted the basis for evaluation of the training by the Panel and the future Authority. If a trainee failed to submit a report, he or she would not receive a certificate.

41. As regards the content of the training certificates to be issued to the trainees, the Panel decided that the certificate should specify the name of the trainee, the name of the registered pioneer investor, the discipline in which training was provided, its duration and the names of the institutes where the training had been carried out. It was also agreed that the certificate should be issued in the language of the trainee, if it was one of the official languages of the United Nations.

42. The Panel noted that registered pioneer investors were free to issue their own certificates, if they wished to do so. The trainee would in fact benefit from such a document.

(e) Form of the progress reports

43. The Training Panel decided that the progress reports on the training programmes being implemented should be submitted by the registered pioneer investors in writing, in order to facilitate a review of the information provided and an examination of whether the training was being carried out in conformity with the programmes that had been approved by the Panel.

(f) Format of the reports of the trainees

44. The Panel emphasized that the reason why the trainees had been asked to submit a report to the Panel upon the completion of their training was to enable the Panel to verify that the training had been carried out in accordance with the training programmes that had been approved by the Panel. It was decided that each trainee should submit an individual report. The report should contain a detailed summary of the training he or she had received. It should state whether the training had been satisfactory and whether it had covered all of the stages of the traineeship that had been mentioned in the relevant training programme. The reports submitted by the three trainees who had received training in Japan (LOS/PCN/TP/1994/CRP.25, see annex II) were considered a good example in this regard. The Panel decided that it should not establish a

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specific format for the presentation of the report, and that the trainees could write their report in any one of the official languages of the United Nations, which could then be translated into all official languages. It was also decided that a copy of the technical report that the trainees prepared on the practical stage of their training would be forwarded by the registered pioneer investor to the Authority.

### 2. Review of the training programmes submitted by the registered pioneer investors

45. The Training Panel approved all of the training programmes of the registered pioneer investors, i.e., France, Japan, the Russian Federation, India, China and the Interoceanmetal Joint Organization, and selected candidates for the traineeships offered under those programmes. It has also been receiving progress reports on the implementation of some of those programmes.

#### (a) The training programme of France

46. At its first meeting, the Panel considered and approved the training programme submitted by France (LOS/PCN/TP/1991/CRP.2). The programme was revised at the second meeting to correct an error in the preambular paragraph of the profile on each traineeship, where instead of "Candidates should therefore possess", the correct wording should have been "After the training programme, candidates should therefore possess", because the capabilities listed were those the trainees would acquire after successfully completing the course. The revised programme (LOS/PCN/TP/1991/CRP.2/Rev.1, see annex II) was announced in a draft note verbale, which was submitted to the General Committee in document LOS/PCN/BUR/R.16 (see annex III). The programme offered one traineeship, of 9 to 15 months' duration, in each of the following disciplines: mining geology and geological data processing; exploration geophysics; and naval engineering, starting in November 1992, exclusive of a language refresher course of up to three months if needed by the trainee.

47. The Panel proceeded to select candidates for the training programme of France at its third meeting. A synopsis of the applications submitted for the traineeships under that programme was contained in document LOS/PCN/TP/1992/CRP.10 (see annex II). In view of the fact that there were no sufficiently qualified applicants for the traineeship in naval engineering, the Panel requested France to convert that traineeship into one in mining geology and geological data processing. The French authorities informally agreed to this and the Panel selected Mr. Ahmed Braham from Tunisia and Mr. Kaiser Gonçalves de Souza from Brazil for the two traineeships in mining geology and geological data processing; and Mr. Mamadou Ndiaye from Senegal for the traineeship in exploration geophysics (LOS/PCN/BUR/R.18, see annex III). These candidates were then designated by the Preparatory Commission for those traineeships (LOS/PCN/L.108, para. 15).

48. The delegation of France submitted written progress reports on the implementation of its training programme at the fourth (LOS/PCN/TP/1993/CRP.16), fifth (LOS/PCN/TP/1994/CRP.20) and sixth (LOS/PCN/TP/1994/CRP.24) meetings of the Panel (see annex II). The Panel was informed that Mr. Braham had

successfully concluded his traineeship in September 1993, and that Mr. Kaiser Gonçalves de Souza and Mr. Mamadou Ndiaye had commenced their training in October 1993 and would complete it on 30 September 1994.

49. At its sixth meeting, the Panel proceeded to evaluate the training received by Mr. Ahmed Braham who had trained from 8 November 1992 to 15 September 1993 in mining geology and geological data processing under the training programme of France. The Panel had at its disposal a copy of the report submitted by the trainee and the reports submitted by the delegation of France to the Training Panel at the fifth (LOS/PCN/TP/1994/CRP.20, see annex II) and sixth (LOS/PCN/TP/1994/CRP.26, see annex II) meetings. In addition the delegation of France had attested to the completion of the traineeship in a letter addressed to the Chairman of the Preparatory Commission for submission to the General Committee at the twelfth session of the Preparatory Commission in February 1994 (LOS/PCN/136). The Panel decided that the training had been carried out in accordance with the programme it had adopted and recommended the issuance of a training certificate to Mr. Braham by the Preparatory Commission (LOS/PCN/BUR/R.47, see annex III). A copy of Mr. Braham's comprehensive report was given to the Secretariat for transfer to the Authority.

### (b) The training programme of Japan

50. Japan submitted its training programme (LOS/PCN/TP/1991/CRP.3) at the first meeting of the Training Panel. Following a review of that programme, the Panel considered that it required further elaboration. The commencement date (May 1993) and the duration of the programme (six months), seen in the light of the French programme, suggested the need for some modifications. The Panel also suggested that the note at the end of the programme to the effect that "all of the above are subject to change" created too much uncertainty. Japan informed the Panel that this annotation did not apply to the entire programme, but to specific elements that might be modified at the time the traineeships were being implemented. The Panel requested Japan to consider making some adjustments to its programme. A revised programme was submitted by Japan to the second meeting of the Panel (LOS/PCN/TP/1992/CRP.5). In its review of that programme, the Panel suggested in relation to profile 3 on training in electronic engineering that since electrical engineering related to power generation and not electronics, it was not advisable to request qualifications in that discipline of applicants for the training programme. A corrigendum was issued to the document to reflect that point. The programme was then approved by the Panel (LOS/PCN/TP/1992/CRP.5 and Corr.1, see annex II) and announced in a draft note verbale, which was submitted to the General Committee in document LOS/PCN/BUR/R.16 (see annex III). The programme offered one traineeship in each of the following disciplines: geology; geophysics; and electronic engineering, starting in May 1993 for a period of approximately 10 months, inclusive of a language course.

51. At its third meeting, the Panel proceeded to select candidates for the training programme of Japan. A synopsis of the applications submitted for the traineeships under that programme was contained in document LOS/PCN/TP/1992/CRP.10 (see annex II). The Panel selected Mr. Pramuan Kohpina from Thailand for the traineeship in geology; Mr. Eu-Dug Hwang from the Republic of Korea for the traineeship in geophysics; and Mr. Mahmoud Mohammad-Taheri from

the Islamic Republic of Iran for the traineeship in electronic engineering (LOS/PCN/BUR/R.18, see annex III). These candidates were then designated by the Preparatory Commission for those traineeships (LOS/PCN/L.108, para. 15).

52. Japan informed the Panel, at its fifth meeting, that the above-mentioned three trainees would complete their training in February 1994.

53. At the sixth meeting, the Panel evaluated the training received by the three trainees from 18 May 1993 to 26 February 1994 under the training programme of Japan. It had at its disposal a report on the trainees submitted by Japan (LOS/PCN/TP/1994/CRP.24, see annex II) and the reports submitted by Mr. Pramuan Kohpina who trained in geology; Mr. Eu-Dug Hwang who trained in geophysics; and Mr. Mahmoud Mohammad-Taheri who trained in electronic engineering, on the training they had received in Japan (LOS/PCN/TP/1994/CRP.25, see annex II). The Panel decided that the training had been carried out in accordance with the programme it had adopted and recommended the issuance of training certificates to Mr. Kohpina, Mr. Hwang and Mr. Mohammad-Taheri (LOS/PCN/BUR/R.47, see annex III). The three trainees each wrote one part of a tentative instruction manual for a survey of manganese nodule deposits entitled "Geology and prospecting of manganese nodules". A copy of that comprehensive report was given to the Secretariat for transfer to the Authority.

### (c) The training programme of the Russian Federation

54. The Union of Soviet Socialist Republics submitted its training programme (LOS/PCN/TP/1991/CRP.4 and Add.1) at the first meeting of the Training Panel. Following a review of that programme, the Panel considered that the proposed commencement date for the programme (October 1993) and its duration (six months), seen in the light of the French programme, suggested the need for some modifications. Another area of concern was the fact that in its programme the USSR required either the Governments whose trainees were their nationals or the United Nations to pay for the passage of the trainees. The Panel requested the USSR to consider making some adjustments to its programme. A revised programme (LOS/PCN/TP/1992/CRP.11, see annex II) was submitted by the Russian Federation to the third meeting of the Panel and was approved by the Panel at the same meeting. The training programme was announced in a draft note verbale, which was submitted to the General Committee in document LOS/PCN/BUR/R.19 (see annex III). The programme offered one traineeship in each of the following disciplines: marine geology; marine geophysics; and marine ecology, starting in October 1993 for a period of approximately 10 months, inclusive of a language course.

55. At its fourth meeting, the Panel proceeded to select candidates for the training programme of the Russian Federation. A synopsis of the applications submitted for the traineeships under that programme was contained in document LOS/PCN/TP/1993/CRP.14 (see annex II). The Panel selected Mr. Thomas M. Munyao from Kenya for the traineeship in marine geology; Mr. Juan Lorenzo Díaz Naveas from Chile for the traineeship in marine geophysics; and Mr. Samir A. Mutwalli from Saudi Arabia for the traineeship in marine ecology (LOS/PCN/BUR/R.26, see annex III). These candidates were then designated by the Preparatory Commission for those traineeships (LOS/PCN/L.113/Rev.1, para. 20).

56. The Russian Federation informed the Panel, at its fifth meeting, that of the three trainees, only Mr. Mutwalli and Mr. Díaz Naveas had presented themselves for the training programme and had commenced their training in October and November 1993 respectively. Mr. Munyao was scheduled to commence his training on 1 October 1993 but never responded to the notifications sent to him by the Russian Federation. Since the deadline for the commencement of the training was now long past, the Russian Federation could grant no further postponement of that traineeship.

57. At the sixth meeting, the Russian Federation submitted a written report on the successful completion of the traineeships by Mr. Mutwalli and Mr. Díaz Naveas in July 1994 (LOS/PCN/TP/1994/CRP.29, see annex II). It was pointed out that with the completion of the traineeships by the two trainees, the Russian Federation had fully discharged its obligation with respect to training. The reports of the trainees would be forwarded to the Secretariat for transfer to the Authority.

58. The Panel took note of the report submitted. It decided that in the absence of the reports of the trainees, it could not proceed with an evaluation of the training received under the training programme.

### (d) The training programme of India

59. India submitted its training programme (LOS/PCN/TP/1992/CRP.6) at the second meeting of the Training Panel. Following a review of that programme, the Panel considered that it would be more desirable for the programme to be reorganized so as to provide clear profiles for training in three of the eight priority disciplines set forth in document LOS/PCN/BUR/R.6. It was also pointed out that the six weeks' shipboard training offered was of too short a duration and should be increased. The Panel requested India to consider making some adjustments to its programme. A revised programme was submitted by India (LOS/PCN/TP/1992/CRP.8) to the third meeting of the Panel. In its review of that programme, the Panel decided that the upper age-limit of 35 should be changed to 40 years, which represented the age-limit established by the Panel at its second meeting (see para. 34 above). A corrigendum was issued to CRP.8 to reflect that point as well as an editorial change, and the programme (LOS/PCN/TP/1992/CRP.8 and Corr.1, see annex II) was then approved by the Panel at its third meeting. The training programme of India was announced in a draft note verbale, which was submitted to the General Committee in document LOS/PCN/BUR/R.19 (see annex III). The programme offered one traineeship in each of the following disciplines: mining geology; exploration geophysics; and chemical engineering, starting in October 1993 for a period of 10 months.

60. At its fourth meeting, the Panel proceeded to select candidates for the training programme of India. A synopsis of the applications submitted for the traineeships under that programme was contained in document LOS/PCN/TP/1993/CRP.14 (see annex II). In view of the fact that there were no sufficiently qualified applicants for the traineeship in chemical engineering, the Panel decided that the traineeship would need to be deferred and re-announced so that a suitable candidate could be selected at its next meeting. The Panel selected Mr. Khalid Abdullah Kadi from Saudi Arabia for the traineeship in mining geology; and Mr. Kwame Odame Boamah from Ghana for the

traineeship in exploration geophysics (LOS/PCN/BUR/R.26, see annex III). These candidates were then designated by the Preparatory Commission for those traineeships (LOS/PCN/L.113/Rev.1, para. 20). The traineeship in chemical engineering was re-announced in a new draft note verbale, which was submitted to the General Committee in document LOS/PCN/BUR/R.28 (see annex III).

61. Once it became clear that the Panel would not hold another meeting in 1993 and would therefore not be able, inter alia, to select a candidate for the traineeship in chemical engineering, scheduled to commence in October 1993, India was requested by the Secretariat, in a letter dated 26 July 1993, to postpone the commencement of that traineeship until the middle or end of 1994. In its reply of 5 August 1993, India agreed to its postponement until the end of 1994 (LOS/PCN/TP/1993/CRP.17, see annex II). A second corrigendum (see annex II) was issued to the training programme contained in LOS/PCN/TP/1992/CRP.8 and Corr.1 to reflect that decision. The note verbale announcing that traineeship, which was sent out to Governments by the Secretariat shortly thereafter, was also revised accordingly.

62. At its fifth meeting, the Panel selected Mr. Saad M. Ielea from Iraq for the traineeship in chemical engineering (LOS/PCN/BUR/R.36, see annex III). A synopsis of his application was contained in document LOS/PCN/TP/1994/CRP.19 (see annex II). Mr. Ielea was designated by the Preparatory Commission for the traineeship in chemical engineering (LOS/PCN/L.114/Rev.1, para. 22).

63. India informed the Panel, at the fifth meeting, that Mr. Kadi and Mr. Boamah had commenced their training in October 1993.

64. At the sixth meeting, India reported that two of the three trainees, namely Mr. Khalid Abdullah Kadi (Saudi Arabia) and Mr. Kwame Odame Boamah (Ghana), had completed their training in July 1994 (LOS/PCN/TP/1994/CRP.27, see annex II). The reports of the trainees on the training they had received in India were submitted to the Panel. India informed the Panel that the Department of Ocean Development would submit a report on the trainees at a later stage and that it would also issue certificates to the trainees. Copies of that report and the certificates would be sent to the Secretariat for transfer to the Authority. The reports of the trainees were given to the Secretariat for transfer to the Authority.

65. The Panel took note of the report submitted. It decided that in the absence of the report of the Department of Ocean Development, it could not proceed with an evaluation of the training received under the training programme.

### (e) The training programme of China

66. On 12 March 1992, the General Committee on behalf of the Preparatory Commission unanimously adopted the Understanding on the Fulfilment of Obligations by the Registered Pioneer Investor, the China Ocean Mineral Resources Research and Development Association (COMRA) and its certifying State, the People's Republic of China. 11/ Paragraph 2 of the Understanding relates to training and contains the same obligation as had been agreed upon with respect to the first group of registered pioneer investors (see para. 19 above), with

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the exception of the number of individuals to be trained, which it was agreed "shall consist of no less than four individuals".

67. China submitted its training programme (LOS/PCN/TP/1993/CRP.13) at the fourth meeting of the Training Panel. Following a review of that programme, the Panel considered that the academic requirements of applicants needed to be revised in order to conform to the criterion established by the Panel in this regard at its second meeting (see para. 33 above). It was also proposed that the fourth stage of the traineeship in metallurgical engineering should contain the same requirement as the other traineeships being offered, namely that, based on the training of the previous stages, the trainee would be required to select a topic for research and prepare a detailed report in the training centre. The Panel requested China to consider making some adjustments to its programme. The training programme was revised at the same meeting (LOS/PCN/TP/1993/CRP.13/Rev.1, see annex II) and was then subsequently approved by the Panel. It was announced in a draft note verbale, which was submitted to the General Committee in document LOS/PCN/BUR/R.27 (see annex III). The programme offered one traineeship in marine geology; one in marine geophysics; and two traineeships in metallurgical engineering, starting in March 1994, for a period of approximately 11 months, inclusive of a language course.

68. In the light of the decision not to hold another meeting of the Panel in 1993, in order, inter alia, to select candidates for the traineeships offered under the training programme of China, scheduled to commence in March 1994, China was requested by the Secretariat, in a letter dated 26 July 1993, to postpone the commencement of its training programme until the middle or end of 1994. In its reply of 18 August 1993, China agreed to postpone its training programme and stated that the specific time for the implementation of the programme would be raised at the next meeting of the Panel (LOS/PCN/TP/1993/CRP.17, see annex II). A corrigendum (see annex II) was issued to the training programme contained in LOS/PCN/TP/1993/CRP.13/Rev.1 to reflect that decision. The note verbale, which was sent to Governments by the Secretariat shortly thereafter, was also revised accordingly.

69. At its fifth meeting, the Panel proceeded to select candidates for the training programme of China, which, according to the Chinese expert, was scheduled to begin in May 1994. A synopsis of the applications submitted for the traineeships under the programme was contained in document LOS/PCN/TP/1994/CRP.19 (see annex II). In view of the fact that there were only two qualified applicants for the two traineeships in metallurgical engineering, one of whom was 41 years of age, the Panel decided that it needed to waive the age criterion it had established at its second meeting (see para. 34 above). The Panel selected Mr. Mourad Kelkal from Algeria for the traineeship in marine geology; Mr. Ibrahim Sarour Balla from the Sudan for the traineeship in marine geophysics; and Ms. Natalya Chigrinova from Belarus and Mr. Kyung-Soo Choi from the Republic of Korea for the traineeships in metallurgical engineering (LOS/PCN/BUR/R.36, see annex III). These candidates were then designated by the Preparatory Commission for those traineeships (LOS/PCN/L.114/Rev.1, para. 22).

70. China submitted a written report on the implementation of its training programme at the sixth meeting of the Panel (LOS/PCN/TP/1994/CRP.28). It reported that the four trainees had commenced their training in the middle of

May 1994. They were currently undergoing theoretical as well as language training. Practical training on board a research vessel would take place in the middle of August 1994.

### (f) The training programme of the Interoceanmetal Joint Organization

71. On 18 August 1992, the General Committee, on behalf of the Preparatory Commission, unanimously adopted the Understanding on the Fulfilment of Obligations by the Registered Pioneer Investor, the Interoceanmetal Joint Organization and its certifying States, the Republic of Bulgaria, the Republic of Cuba, the Czech and Slovak Federal Republic, the Republic of Poland and the Russian Federation. 12/ Paragraph 2 of the Understanding relates to training and contains the same obligation as had been agreed upon with respect to China and also with respect to the first group of registered pioneer investors, except that the number of individuals to be trained "shall consist of no less than four individuals".

72. The Interoceanmetal Joint Organization (IOM) submitted its programme (LOS/PCN/TP/1993/CRP.12) at the fourth meeting of the Training Panel. Following a review of that programme, the Panel considered that it would be desirable to specify where, when and how long each trainee would spend at the various institutions. It also expressed the need for better coordination of the conduct of the training in several institutes. Other proposals for revision related to the academic qualifications required of the applicants and the restriction of the traineeship in chemical/metallurgical engineering to only metallurgical engineering. The Panel requested IOM to consider making some adjustments to its programme. The training programme was revised at the same meeting (LOS/PCN/TP/1993/CRP.12/Rev.1, see annex II) and was then approved by the Panel. The training programme was announced in a draft note verbale, which was submitted to the General Committee in document LOS/PCN/BUR/R.27 (see annex III). The programme offered one traineeship in geophysics; one in marine ecology; and two traineeships in metallurgical engineering, starting between September and November 1994 for a period of approximately 10 months.

73. At its fifth meeting, the Panel proceeded to select candidates for the training programme of IOM. A synopsis of the applications submitted for the traineeships under that programme was contained in document LOS/PCN/TP/1994/CRP.19 (see annex II). In view of the fact that there was only one applicant for the two traineeships in metallurgical engineering and no applicant for the traineeship in marine ecology, the Panel requested IOM to convert one of the traineeships in metallurgical engineering and the traineeship in marine ecology to two traineeships in geophysics. IOM agreed to accept three trainees in geophysics and to adjust its training programme accordingly. The Panel then selected Mr. Jong-Nam Kim from the Republic of Korea, Mr. Arif Hussain from Pakistan and Mr. Ali Ibrahim Ahmed from the Sudan for the three traineeships in geophysics; and Mr. Alexandr Shevchyonok from Belarus for the one traineeship in metallurgical engineering (LOS/PCN/BUR/R.36, see annex III). These candidates were then designated by the Preparatory Commission for those traineeships (LOS/PCN/L.114/Rev.1, para. 22).

74. IOM informed the Panel at its sixth meeting that there would be no delay in the commencement of its training programme on 28 October 1994 and that it was ready to receive the trainees.

### 3. Consideration of other training opportunities

75. It will be recalled that in paragraph 3.1.3 (k) of the Preparatory Commission Training Programme (LOS/PCN/SCN.2/L.6/Rev.1, see annex I), it was anticipated that there might be other relevant training contemplated which should be brought to the attention of the Preparatory Commission. The Secretariat was therefore specifically requested in step 1, paragraph (c), of document LOS/PCN/SCN.2/L.7 (see annex I) "to make inquiries with other technologically advanced States about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments, so that further use can be made of the information on eligible persons submitted by nominating Governments".

76. Two training programmes have been submitted under step 1, paragraph (c), of document LOS/PCN/SCN.2/L.7, one by the International Ocean Institute and one by Germany. Inquiries have also been made with other technologically advanced States.

#### (a) The training programme of the International Ocean Institute

77. The Chairman of the International Ocean Institute, Professor Elisabeth Mann Borgese, first introduced the Institute's training programme at the first meeting of the Training Panel. A written proposal (LOS/PCN/TP/1994/CRP.18, see annex II), providing for two five-week courses (one in China in October 1993 and one in India in August 1994) in the organizational, financial and economic management of deep-sea mining operations was submitted by the Institute at the conclusion of the fourth meeting of the Panel.

78. At the fifth meeting, Professor Mann Borgese informed the Panel that 13 people had taken part in the first five-week course held in China in cooperation with the China Ocean Mineral Resources Research and Development Association (COMRA). Some of the participants had previously applied for the training programmes offered by Japan and India and were selected by the Institute on the basis of the synopses of applications submitted for the traineeships offered under the training programmes of France, Japan, India and the Russian Federation (LOS/PCN/TP/1992/CRP.10 and LOS/PCN/TP/1993/CRP.14, see annex II) provided inter-sessionally by the Secretariat. Of the 14 applicants that were preselected and contacted by the Institute, the following agreed to participate in the training course: Mr. Hussain Bin Abu Baker Bin Ahmed Al-Zubaidi from Oman, Mr. Patrick Joseph from the Seychelles, Mr. John K. Kagasi from Kenya and Mr. Wan-Soo Kim from the Republic of Korea. Other preselected candidates, who were contacted but did not participate in the course, were Mr. Samir A. Mutwalli from Saudi Arabia and Mr. Pongsak Sripongpun from Thailand. Their fellow nationals participated instead.

79. The Panel was informed that the next five-week training course would be held in India (September 1994) in cooperation with the Indian Institute of

Technology. It was pointed out by Professor Mann Borgese that the training programmes of the International Ocean Institute would continue on an annual basis.

80. The Panel wishes to place on record its deep appreciation to the International Ocean Institute for its training programme, and in particular to Professor Mann Borgese for her untiring efforts over the years in training people from different parts of the world.

### (b) The training programme of Germany

81. At the second meeting of the Panel, the representative of Germany said that his country intended to offer training in disciplines other than those that had been offered so far.

82. The German Ministry of Economic Cooperation informed the Panel, at its third meeting, that it had agreed to finance the training of perhaps three or four trainees, and that a training programme was currently being worked out.

83. A training programme was submitted by Germany (LOS/PCN/TP/1993/CRP.15) at the fourth meeting of the Panel. In its consideration of the programme, the Panel expressed the view that it would be more desirable for the programme to be reorganized so as to conform to the format of the programmes already adopted. Details were requested on the type of training to be offered and the disciplines involved. The age-limit, it was noted, should be raised to 40 years in accordance with the age criterion established by the Panel at its second meeting (see para. 34 above). The Panel also requested Germany to consider the possibility of giving courses in English.

84. Once it became clear that the Panel would not hold another meeting in 1993, and would therefore not be able, inter alia, to consider a revision of the training programme of Germany, scheduled to commence in March 1994, Germany was requested by the Secretariat, in a letter dated 27 July 1993, to postpone the commencement of its training programme and to take the time factor into account in the revision of its programme (LOS/PCN/TP/1993/CRP.17, see annex II).

85. A revised programme (LOS/PCN/TP/1994/CRP.21) was submitted by Germany to the fifth meeting of the Panel and adopted at the same meeting. The programme offered multidisciplinary training in the management of deep seabed minerals to four trainees, starting in November 1994 for a period of 18 months, inclusive of a language course.

86. As regards the selection of four trainees for the training programme of Germany, the Panel requested the Secretariat to follow the same procedure as in the case of the International Ocean Institute and make available to Germany the synopses of all the applications submitted for the traineeships offered under the training programmes of the registered pioneer investors (LOS/PCN/TP/1992/CRP.10, LOS/PCN/TP/1993/CRP.14 and LOS/PCN/TP/1994/CRP.19, see annex II) and the files of the applicants. Germany would thus be given the opportunity to select trainees from among those applicants if it so wished.

87. The Panel wishes to place on record its deep appreciation to the Government of Germany for its training programme.

88. The Secretariat was informed, on 5 April 1994, that Germany wished to postpone the commencement of its training programme until the first half of 1995. It was also informed that, following a review of the synopses of applications, it was not possible to find any suitable candidates and Germany therefore intended to announce its programme via its embassies.

### (c) Inquiries with other technologically advanced States

89. At its fourth meeting, the Panel requested the Secretariat to make inquiries with other technologically advanced States in accordance with step 1, paragraph (c), of LOS/PCN/SCN.2/L.7 (see annex I) and to submit this information for its consideration at the next meeting. In order to provide guidance to the Secretariat as regards the States that should be contacted, the Panel drew up inter-sessionally a list of States, as follows: Australia, Belgium, Canada, Denmark, Finland, Italy, Netherlands, New Zealand, Norway, Sweden, Ukraine, United Kingdom of Great Britain and Northern Ireland and United States of America. A letter was sent to those States by the Secretariat on 26 October 1993.

90. The Secretariat informed the Panel at its fifth meeting that, of the States that had been contacted, only Finland had sent a reply so far (LOS/PCN/TP/1994/CRP.22, see annex II). The Panel expressed its appreciation to the Government of Finland for its response and recommended that the Authority pursue the offer by the Geological Survey of Finland to provide training in the fields of its expertise, since the Panel, with preparations under way to conclude its work, could not itself take on that responsibility at the current stage.

### (d) Offer of training by the Intergovernmental Oceanographic Commission

91. At the sixth meeting of the Panel, the representative of the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO) informed the Panel (LOS/PCN/TP/1994/CRP.30, see annex II) that IOC conducted many programmes in ocean sciences, ocean services, and training and mutual assistance (TEMA). IOC provides annually, through its TEMA programme, short-term training fellowships which enable scientists from developing countries to participate in various highly scientific and technical activities in different fields. IOC would like to cooperate with the Preparatory Commission and the Authority in training experts for the Authority, in particular in the light of its scientific and technical needs in the field of marine sciences.

92. The Panel expressed its appreciation to IOC for its offer of training.

## III. IMPLICATIONS OF THE ENTRY INTO FORCE OF THE CONVENTION FOR THE PREPARATORY COMMISSION TRAINING PROGRAMME: RECOMMENDATIONS AND CONCLUSIONS

93. Following the deposit of the sixtieth instrument of ratification or accession on 16 November 1993, the Panel decided, at its fifth meeting, to consider the implications of the entry into force of the United Nations Convention on the Law of the Sea for the Preparatory Commission Training Programme and to make its recommendations to the General Committee on those issues which would be outstanding on 16 November 1994 and thus required consideration by the future Authority.

94. It was generally accepted that the mandate of the Panel would not have been fully discharged at the time of entry into force. However, different points of view were expressed on the kinds of recommendations that should be made to the Authority to deal with the outstanding issues. Some members were of the view that the Authority should resume the work of the Panel, acting in accordance with the procedures that had been established. In this connection, it was recommended by one member that the Panel should be maintained under the Authority. Another member was of the view that the Panel should not ask the Authority to act in accordance with the procedures it had established; rather it should make a critical evaluation of its work. In this latter respect, some members agreed that the Panel should critically evaluate its procedures from the point of view of their possible simplification.

95. The report accommodates these various approaches by summarizing the accomplishments of the Panel in chapter II; listing the issues identified as outstanding in section A below; and reflecting the discussions that took place on issues relating to the procedures of the Panel as drawn from its experience in section B below.

### A. Outstanding issues

#### Monitoring of the implementation of the training programmes of the registered pioneer investors

96. The Panel will not be in a position to monitor, on the basis of the progress reports of the registered pioneer investors, the implementation of those training programmes which will not have been completed by the first week of August 1994.

97. The Training Panel therefore recommends that its monitoring function be continued by the Authority.

#### Evaluation of the training received

98. While the Panel has been able to evaluate the training received by the three trainees under the training programme of Japan and the training received by one trainee under the training programme of France, it will not be able to evaluate the training received by the other trainees. In this connection, the Panel underlined the necessity for trainees to submit a report on the training

they received. Evaluations could only be carried out on the basis of both the report of the trainee on the training he or she received and the report of the registered pioneer investor on the trainee. A satisfactory outcome of the evaluation process was the prerequisite for a recommendation to the Preparatory Commission to issue a training certificate.

99. The Panel recommends that the Authority ensure that this evaluation function is continued.

### Issuance of training certificates

100. The majority of the trainees are still undergoing training. The Panel will therefore not be in a position to evaluate the training they received and subsequently recommend to the Preparatory Commission the issuance of training certificates to all those who may be eligible.

101. The Training Panel therefore recommends that the Authority issue those training certificates.

### Training programmes of new registered pioneer investors

102. Following the approval of the application submitted by the Government of the Republic of Korea as a pioneer investor under resolution II of the Third United Nations Conference on the Law of the Sea at the summer meeting of the Preparatory Commission in August 1994, a training programme will be submitted by the Republic of Korea as soon as an understanding on the fulfilment of obligations by that registered pioneer investor is adopted.

103. The Training Panel draws the attention of the Authority to the procedures it established with respect to the review and approval of training programmes of registered pioneer investors, the elements to be included in the note verbale and the selection of candidates.

### Other training programmes

104. It has already been pointed out in paragraph 90 above that the Panel could not at the current stage pursue the offer of training provided by the Government of Finland.

105. The Training Panel recommends that the offer of training by Finland and any other future offers by other technologically advanced States be pursued by the Authority. It also draws the attention of the Authority to the procedure established by the Panel for the training programmes of non-registered pioneer investors.

106. The Training Panel also draws the attention of the Authority to the offer of training that was provided by the Intergovernmental Oceanographic Commission.

### Other considerations

107. Some members felt that the provision of refresher courses for past trainees deserved consideration by the Authority in view of the projected delay in the

commencement of deep seabed mining. The time-frame for such courses would be determined by the Authority.

## B. Procedural issues

108. One member expressed the view that the Secretariat could equally well have selected the candidates for subsequent placement by the Panel. Others disagreed and recalled that the problem of an insufficient number, or lack, of qualified candidates for many of the traineeships had necessitated decisions by the Panel to waive some of the criteria it had established for the selection of candidates; to defer a traineeship; and to convert traineeships into ones for which there were a sufficient number of qualified candidates.

109. One member wondered whether the Panel's functions could have been performed in a smaller group. It was recalled that the composition of 21 members reflected the balance between the number of registered and potential pioneer investors at the time of the establishment of the Panel and the other States selected on the principle of equitable geographical distribution. However, it was acknowledged that, with the completion of some of the training programmes, it would have been logical to change the number of members needed to reflect the necessary balance between those registered pioneer investors implementing training programmes and the other States.

110. In conclusion, it should be noted that the records of the Training Panel, the files of the trainees and the files of the applicants for the various training programmes form part of the records of the Preparatory Commission which will be transferred to the Authority at the conclusion of the first session of the Assembly.

## Notes

1/ LOS/PCN/L.45, para. 5.

2/ LOS/PCN/L.70, para. 10.

3/ LOS/PCN/L.75, para. 2.

4/ LOS/PCN/L.77, para. 30. The Training Programme was introduced by the Chairman of Special Commission 2. His statement is contained in "Statement on LOS/PCN/SCN.2/L.6/Rev.1 by the Chairman of Special Commission 2 at the 51st plenary meeting, held on 31 August 1989" (LOS/PCN/L.75/Add.1).

5/ LOS/PCN/L.82/Rev.1, para. 48.

6/ LOS/PCN/L.87, paras. 39-42, and annex.

7/ LOS/PCN/L.92, paras. 33-34. The annex contains the list of experts constituting the Panel.

8/ LOS/PCN/L.97, para. 37.

/...

9/ LOS/PCN/L.113/Rev.1, para. 21.

10/ Ibid., para. 22.

11/ LOS/PCN/L.102, para. 47, and annex.

12/ LOS/PCN/L.108, para. 10, and annex.

## Annex I

## DOCUMENTS RELATING TO THE PREPARATORY COMMISSION TRAINING PROGRAMME

UNITED
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FOR THE INTERNATIONAL TRIBUNAL FOR
THE LAW OF THE SEA
Special Commission 2
New York, 14 August-1 September 1989

# DRAFT PRINCIPLES, POLICIES, GUIDELINES AND PROCEDURES FOR A PREPARATORY COMMISSION TRAINING PROGRAMME

Pursuant to resolution II, paragraph 12 (a) (ii), the Preparatory Commission hereby establishes a Training Programme for the interim period which will be carried out in the context of pioneer activities, as defined in resolution II, paragraph 1 (b).

The principles, policies, guidelines and procedures governing the Programme will be as follows.

## 1. Principles

1.1 Training must be planned and carried out in close co-operation between the registered pioneer investors and, as appropriate, the Certifying States on the one hand and the Preparatory Commission on the other.

1.2 Training must ensure the ability of the Enterprise not only to carry out activities in a timely manner but also to keep pace with States and other entities operating in the Area.

1.3 Training must cover all levels and aspects of sea-bed mining activities.

1.4 Training must aim at helping the Enterprise to recruit a sufficient number of personnel of high qualifications and technical competence.

## 2. Policies

2.1 In furtherance of the principle set forth in paragraph 1.1, the Preparatory Commission will establish a Training Panel to plan and carry out the Programme.

/...

2.2 The Programme will provide training in all the different disciplines and skills required by the future Enterprise, to the same extent and level that these disciplines and skills are practised by the registered pioneer investors.

2.3 The Programme will incorporate, as and when appropriate, both general and specialized training, and both theoretical and practical training. The training methods and facilities used by each registered pioneer investor, including those with a technological component, should be the best available to it. Where training or a component of the training provided is to be undertaken in universities or research institutions, these must be widely recognized in the country concerned.

2.4 The Programme will give initial priority to training in surveying and exploration, and assessment of the results thereof.

2.5 The Programme will aim at maximum cost-effectiveness and the achievement of an appropriate balance between its qualitative and quantitative requirements.

2.6 Implementation of the Programme will be scheduled in such a way as to maximize the value and timeliness of the knowledge and experience gained by trainees relative to the date of establishment of the Enterprise. Pioneer investors will, after their registration and at set intervals thereafter, advise the Preparatory Commission of the training opportunities arising out of their pioneer activities. They will also advise the Preparatory Commission of the financial implications of their proposed training schedules.

2.7 All signatories to the Convention will be entitled to nominate candidates for training.

2.8 Selection of candidates by the Training Panel and their subsequent designation by the Preparatory Commission will be done in accordance with resolution II, paragraph 12 (a) (ii), bearing in mind the need to ensure both the highest possible standards and equitable geographical distribution. As appropriate, designated trainees may undergo more than one period of training and may also receive training from more than one registered pioneer investor.

2.9 Traineeships will not, in principle, be awarded for the pursuit of academic studies leading to degrees or diplomas. Rather, they are intended to give persons the opportunity to extend their professional or technical knowledge and experience to areas applicable to future sea-bed mining and to acquaint them with advanced methods and techniques currently used by registered pioneer investors.

2.10 Registered pioneer investors will submit to the Preparatory Commission reports on each person trained, including a full description of the training provided and the context in which it was carried out.

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2.11 The Programme will require that Governments of trainees give assurances to the Preparatory Commission that the persons concerned will be appropriately reabsorbed in their professions or employed in related fields. These Governments will also be required to co-operate in making trained persons available to the Enterprise at its request and, in the interim period, to the Preparatory Commission should it require the services of these experts.

2.12 The Programme will require that the Preparatory Commission, the trainees selected and their Governments co-operate in observing the procedures and formalities required by the States receiving the trainees.

## 3. Guidelines and procedures

### 3.1 The Training Panel

3.1.1 The Training Panel will recommend to the Preparatory Commission the measures to be taken pursuant to the principles and policies established for the implementation of paragraph 12 (a) (ii) of resolution II.

3.1.2 The Panel will consist of 15 members who are experts in appropriate fields. The composition of the Panel will be determined by the Preparatory Commission and revised as required. The Training Panel will meet during meetings of the Preparatory Commission, unless the Commission decides otherwise.

3.1.3 The Training Panel will:

(a) Establish a training schedule based on information furnished by the registered pioneer investors in accordance with the policy set forth in paragraph 2.6, bearing in mind particularly the initial manpower requirements of the Enterprise;

(b) Formulate the individual traineeships to be offered, including their objectives, a description of the training, eligibility requirements and their duration and location, as well as other requirements that may be attached to a particular traineeship;

(c) Open a register incorporating all the necessary information on the traineeships being offered under the current schedule;

(d) Make a selection from the nominees entered in the Register and recommend them to the Preparatory Commission for designation in respect of the available traineeships;

(e) Establish a standard format for the preparation of performance reports to be prepared pursuant to the policy set forth in paragraph 2.10;

/...

(f) Evaluate performance reports in the event that designated persons are selected for further training;

(g) Prepare for the Preparatory Commission training certificates attesting to the completion of a traineeship and to the nature of the training given;

(h) Keep the Programme under review particularly with respect to established priorities, scheduling and financial implications, taking account also of the experience gained by both registered pioneer investors and trainees;

(i) Submit an annual progress report to the Preparatory Commission on the training provided, including information on all expenditures made under the Programme;

(j) Establish procedures as may be required for the administration of the Programme;

(k) Receive information and advice from Governments or institutions on relevant training provided by means of seminars and other forms of group training and inform the Preparatory Commission thereof.

3.1.4 Administrative and support services will be provided to the Training Panel by the United Nations Office for Ocean Affairs and the Law of the Sea. These services will include the processing of candidatures and, on behalf of the Preparatory Commission and the future Enterprise, the maintenance of personnel records on trainees.

### 3.2 Nomination and selection of candidates

3.2.1 Upon the establishment of the Register by the Training Panel, the United Nations Office for Ocean Affairs and the Law of the Sea will circulate notices to Governments, signatories to the Convention, inviting nominations against the traineeships set forth in the Register.

3.2.2 Selection will be done according to the policy set forth in paragraph 2.8, and shall take account of such factors as age and the language skills desired for a particular traineeship.

3.2.3 Persons selected from the Register by the Training Panel will be recommended for designation by the Preparatory Commission under paragraph 12 of resolution II.

3.2.4 Nominating Governments will co-operate in facilitating the availability of the designated person at the time and for the period established in the traineeship. In accordance with the policy set forth in paragraph 2.11, these Governments will also co-operate with the future Enterprise in making available the services of their nationals trained under the Programme.

## 3.3 Conditions and requirements of traineeships

3.3.1 The registered pioneer investors will be responsible for the direct supervision of the training they provide.

3.3.2 Appropriate arrangements will be made for insurance to cover liability to third parties for damage to persons or property caused by trainees, as well as to cover sickness, accident, disability or death of a trainee during the course of the training.

3.3.3 The trainees must:

(a) Carry out their training in the manner and within the period pr cribed by the Preparatory Commission;

(b) Conduct themselves at all times in a manner compatible with their status as holders of Preparatory Commission traineeships. In the event of failure to do so, the host Government may ask the Preparatory Commission to terminate the traineeship;

(c) Undertake, if so required by the registered pioneer investor concerned, to sign a confidentiality agreement and/or a non-competition agreement covering a reasonable period extending beyond the completion of the traineeship; 1/

(d) Obtain the written permission of the registered pioneer investor concerned to publish, during the course of a traineeship, articles relating to his or her training.

These conditions and requirements will be specified by the Preparatory Commission when granting traineeships.

## 3.4 Administrative arrangements

3.4.1 Trainees will be required to undergo a thorough medical examination upon notice of their designation and, if more than four months have elapsed prior to the commencement of the training, to undergo a further examination.

3.4.2 Appropriate arrangements will be made with respect to:

(a) The travel of the trainees;

(b) The living expenses of the trainees and any other incidental costs associated with the traineeship;

(c) Medical insurance coverage.

/...

3.4.3 The Government of the trainee will be responsible for assistance in securing the necessary passports and visas and the receiving Government will also co-operate to this end.

## Notes

1/ The duration of each agreement will be determined following consultations between the Preparatory Commission and the registered pioneer investor concerned.

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Eighth session
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# IMPLEMENTATION OF THE PREPARATORY COMMISSION TRAINING PROGRAMME

## RECOMMENDATIONS OF SPECIAL COMMISSION 2

Training is the most important step in providing manpower resources for the Enterprise when it comes into operation. Training is to be seen as a continuous process, and the measures taken during the interim period in accordance with resolution II are a first step in a process to be continued by the Authority and the Enterprise, after entry into force of the Convention.

The Preparatory Commission has adopted the Principles, Policies, Guidelines and Procedures for the Training Programme (as contained in LOS/PCN/SCN.2/L.6/Rev.1) and since the Commission hopes to complete its work by the summer of 1991, the Programme must be under way by that time. The Training Programme shall start as soon as possible after the Preparatory Commission reaches an understanding on the manner in which the Registered Pioneer Investors will fulfil their obligations. In view of the relatively short period of time remaining, the Special Commission recommends the following arrangement.

### STEP 1: ESTABLISH THE PANEL AND INSTRUCT THE SECRETARIAT TO COLLECT AND COLLATE THE INFORMATION NEEDED ON POTENTIAL CANDIDATES AND AVAILABLE TRAINEESHIPS

(a) The Panel should be established, if possible, this year. To do this will require a decision, with reference to paragraph 3.1.2. of L.6/Rev.1, on the nature of the expertise required on the Panel and on the composition of the 15 members. It may be advisable, under this initial arrangement, also to clearly specify that meetings of the Panel will take place during a Preparatory Commission session and that there will be no extra cost involved since Panel members will be attached to the delegations involved.

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* Reissued for technical reasons.

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(b) Upon the request of the Panel, the United Nations Office for Ocean Affairs and the Law of the Sea should carry out the necessary initial functions, as outlined in paragraph 3.1.3, subparagraphs (a), (b) and (c) of L.6/Rev.1. To do this, it will be necessary for the Preparatory Commission to approve the contents of a draft note verbale, to be circulated by the Secretary-General to Member and Observer Governments of the Preparatory Commission. It should call attention to the requirements set forth in L.6/Rev.1 and give additional guidance to Governments to facilitate their selection of nominees. The following elements of the draft note verbale are proposed hereunder:

(i) Governments should be asked to propose one nominee and one alternate, with reference to the particular disciplines described in the Note. It would therefore be necessary to agree on the total list of disciplines involved together with the level of education and experience required and the preferred ages. The disciplines will be those involved in "surveying and exploration, and assessment of the results thereof" in accordance with paragraph 2.4 of L.6/Rev.1, e.g. marine geology, marine geophysics, marine ecology, marine mining engineering, physical oceanography, including sedimentology, and marine dredging. As to qualifications, the Note should ask for a post-graduate degree in science from a University or a graduate degree in engineering; as to experience, at least 2 years of actual work in the relevant field; and as to age, the nominees should be between 25 and 35 years of age, in exceptional cases no older than 40.

(ii) In order that Governments may appreciate the initial scope of the Programme, the Note should specify the number to be accepted in the first group of trainees.

(iii) The Note should call for assurances from the nominating Governments that persons selected, and who are currently employed, are put on leave of absence with pay during the period of their training.

(iv) Other recommended elements of the Note include: advice that a selected person would be required to sign a contract obligating him to serve the Enterprise if called upon, or to serve his or her country for at least 3 years after training; reference to the requirement for a rigorous medical and psychological examination as well as for a subsequent aptitude test, following selection, in order to ensure that the trainee is able to work in a hostile marine environment. (This may include actual sea-going tests).

(c) During the same period in which nominations are being taken, the Secretariat will request Registered Pioneer Investors to indicate what traineeships are presently available or can be made available. It should also be asked to make inquiries with other technologically advanced States about educational and training facilities in areas relevant to sea-bed or ocean exploration, including those relating to the monitoring of deep sea-bed environments, so that further use can be made of the information on eligible persons submitted by nominating Governments.

/...

(d) Following upon the Secretariat's receipt of nominations from Governments and receipt of information on traineeships from the Registered Pioneer Investors, it would facilitate the work of the Panel if the Secretariat were to prepare a collation or summary of the nominations in relation to the information on traineeships received. It may be necessary also for the Secretariat to clarify with nominating Governments that nominees are indeed available for the particular traineeships offered and to ascertain any additional information as to language skills, etc. It would also be useful for the Secretariat to compile a list, for reference purposes, of the educational and training facilities identified by technologically advanced States.

### STEP 2: CONVENE THE FIRST MEETING OF THE PANEL TO SELECT CANDIDATES FOR DESIGNATION BY THE PREPARATORY COMMISSION

The Training Panel would meet during a session of the Preparatory Commission to select candidates against the available traineeships. At that point, it would be necessary to deal with certain additional matters, such as the insurance arrangement under each traineeship, and the preparation of a standardized agreement on confidentiality/non-competition.

Given the several, necessarily sequential steps involved in the administration of the Programme, it is all the more important that the process is initiated this year.

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New York, 14 August-1 September 1989

# REPORT OF THE GROUP OF TECHNICAL EXPERTS TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

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## LETTER OF TRANSMITTAL

16 August 1989

Dear Mr. Chairman,

In accordance with paragraph 3 of the mandate contained in the annex to document LOS/PCN/BUR/R.5 for the meeting of the Group of Technical Experts, we, the members of the Group, were requested to assist the Preparatory Commission on matters relating to the training of personnel, taking into account the work done by the *ad hoc* Working Group on Training in Special Commission 2.

The Group met on 15 and 16 August 1989 at United Nations Headquarters and held four meetings concerning the training of personnel.

The Group was of the opinion that it could best assist the Preparatory Commission by identifying the priority disciplines for training, the skills required of each trainee and the areas of training in preparation for deep sea-bed mining. The Group felt that it could not determine the number of trainees and the duration of training in each discipline on the basis of the information made available to it by the Preparatory Commission.

The Group would like to thank you and the Preparatory Commission for the opportunity to assist in the implementation of the obligations of the pioneer investors. The Group also wishes to draw your attention to the valuable contribution made by the Special Representative of the Secretary-General for the Law of the Sea, Mr. Satya N. Nandan, and also thanks the secretariat of the Office for Ocean Affairs and the Law of the Sea for its assistance at our meetings.

Yours sincerely,

*Signed* in New York on 16 August 1989:

Alfredo José DA SILVA NETTO
(Brazil)

Igor Sergeevich GRAMBERG
(Union of Soviet Socialist Republics)

Knut S. HEIER
(Norway)

Mr. José Luis Jesus
Chairman of the Preparatory Commission
for the International Sea-Bed Authority
and for the International Tribunal
for the Law of the Sea
New York, New York

/...

Takeshi IZUMI
(Japan)

Hicuunga H.E. KAMBAILA
(Zambia)

Naphtali Ndiritu KAMUNDIA
(Kenya) - absent

Jean-Pierre LENOBLE
(France)

Alfonso LOPEZ-REINA
(Colombia)

Sulaiman Zuhdi PANE
(Indonesia)

David W. PASHO
(Canada)

Luis G. PREVAL
(Cuba)

Bodo SCHIRMER
(German Democratic Republic)

T.R.P. SINGH
(India)

Samuel SONA BETAH
(Cameroon)

ZHANG Bingxi
(China)

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## REPORT ON THE TRAINING OF PERSONNEL

1. The Group of Technical Experts was established in accordance with the decision taken by the Preparatory Commission of the International Sea-Bed Authority and for the International Tribunal for the Law of the Sea which is embodied in paragraph 6 of the statement of understanding of 5 September 1986 (LOS/PCN/L.41/Rev.1, annex).

2. The Group met on 15 and 16 August 1989 at United Nations Headquarters and held four meetings concerning the training of personnel.

3. In paragraph 3 of the mandate contained in the annex to document LOS/PCN/BUR/R.5, the Group was requested to assist the Preparatory Commission on matters relating to the training of personnel, taking into account the work done by the ad hoc Working Group on Training in Special Commission 2.

4. In discharging that part of its mandate, the Group also took into account the working papers prepared by the Secretariat on the question of training, in particular LOS/PCN/SCN.2/WP.9, "Implementation of paragraph 12 of resolution II: training".

5. In the light of the work already done in the ad hoc Working Group on Training in Special Commission 2, the Group was of the view that it could best assist the Preparatory Commission by addressing the issues listed below on the basis of which it prepared the attached table:

(a) Priority disciplines. With particular emphasis on exploration, the Group identified the priority disciplines and skills that will be required during the research and development period. This therefore does not include all disciplines that may be required to carry out the work during that period;

(b) Skills required. For the priority disciplines, the Group has itemized the specific skills that are relevant to the period. The skills considered include professional education, the need for prior work experience and specialized areas of knowledge;

(c) Training. The Group has identified the important areas for supplemental or specialized training. They were identified as areas where the capabilities of persons already having a strong educational foundation and work experience should be enhanced in order to effectively apply their discipline to sea-bed resources.

6. The Group was of the view that it could not determine the number of trainees and the duration of training in each discipline on the basis of the information made available to it by the Preparatory Commission.

## SUMMARY TABLE OF DISCIPLINES, SKILLS AND TRAINING AREAS

| Priority discipline | Skills required of the trainee | Training areas |
|---|---|---|
| Chemical/metallurgical engineering | (1) Basic degree in chemical/metallurgical engineering<br>(2) Experience in extractive metallurgy | Processing technology for deep sea-bed minerals |
| Electrical engineering | (1) Basic degree in electrical engineering<br>(2) Experience in electrical mining equipment | Electrical power distribution in a marine environment |
| Electronic engineering | (1) Basic degree in electronics<br>(2) Experience in communication and remote control | (1) Communication<br>(2) Robotics<br>(3) Data processing<br>(4) Exploration and mining technology for deep sea-bed deposits |
| Geology | (1) Basic degree in applied geology<br>(2) Experience in mineral exploration and mining geology | (1) Marine geology and sedimentology; techniques applied to marine exploration<br>(2) Geostatistics<br>(3) Marine geochemistry<br>(4) Reserves assessment<br>(5) Geology of deep sea-bed mineral deposits<br>(6) Environmental studies |
| Geophysics | (1) Basic degree in applied geophysics<br>(2) Experience in mineral exploration | (1) Marine geophysics: special techniques applied to marine exploration (acoustic, seismic, optics)<br>(2) Positioning (satellite, radio, acoustic) for vessels, surface near botton devices<br>(3) Specific techniques used in deep sea-bed exploration |

/...

| Priority discipline | Skills required of the trainee | Training areas |
|---|---|---|
| Marine ecology | (1) Basic degree in environmental sciences<br>(2) Experience in marine environmental studies | (1) Surface and deepsea biology<br>(2) Marine geochemistry<br>(3) Physical oceanography<br>(4) Sedimentology |
| Mechanical engineering | (1) Basic degree in engineering (hydraulic, mechanical engineering)<br>(2) Experience in marine applications | (1) Naval architecture<br>(2) Offshore engineering<br>(3) Hydraulics<br>(4) Equipment and materials handling<br>(5) Mining technology for deep sea-bed deposits |
| Mining engineering | (1) Basic degree in mining engineering<br>(2) Experience in open pit mining/dredging (stratiform deposits) | (1) Exploration techniques for deep sea-bed deposits<br>(2) Marine geotechnical methods<br>(3) Dredging and mining technology for deep sea-bed deposits<br>(4) Mine planning and design for deep sea-bed deposits |

Note: Depending on the position filled by a person having one of the disciplines listed, additional skills or training in such areas as management and cost estimation would be required. The list is presented in alphabetical order and not in the order of priority for training.

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# Annex II

# SELECTED DOCUMENTS OF THE TRAINING PANEL

LOS/PCN/TP/1991/CRP.1
14 August 1991

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 12-30 August 1991

## Provisional agenda

1. Opening of the meeting.

2. Adoption of the agenda.

3. Election of the Chairman.

4. Organization of work, including requirements of the Secretariat.

5. Review of training needs in the light of the state of the deep seabed mining industry.

6. Consideration of the information furnished by the registered pioneer investors and establishment of a training schedule.

7. Formulation of the requirements for applicants.

8. Approval of the contents of the note verbale to be circulated by the Secretary-General to member and observer Governments of the Preparatory Commission.

LOS/PCN/TP/1991/CRP.2/Rev.1
30 March 1992
ENGLISH
ORIGINAL: FRENCH

PREPARATORY COMMISSION FOR THE INTERNATIONAL
SEA-BED AUTHORITY AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 12-30 August 1991

# TRAINING PROGRAMME FOR THE PREPARATORY COMMISSION OF THE INTERNATIONAL SEA-BED AUTHORITY, AS REQUIRED OF PIONEER INVESTORS

## Proposal submitted by the French delegation

Under this programme France is prepared to receive three trainees for a training period of approximately 18 months beginning in November 1992, in one of the following disciplines respectively:

Mining geology and geological data processing;

Exploration geophysics;

Naval engineering.

Courses will be taught in two stages:

A theoretical stage, in one or several institutions of higher learning and continuing training, of between six and nine months duration;

A practical stage in the laboratories of IFREMER, including marine training, of between three and six months duration.

Candidates should have a basic knowledge of French so that any prior language refresher course may be limited to a maximum of three months.

The attached profiles describe in greater detail the different training programmes envisaged and the corresponding levels required.

/...

They will receive traineeships from the French Ministry of Foreign Affairs.

During the programme, they will be required to report regularly to a follow-up panel that will monitor the results of their training. They will also submit a report at the end of their training period on the work accomplished during the practical stage.

The Training Panel of the Preparatory Commission will be informed of the evaluations of the French follow-up panel on the quality of the work accomplished during the training programme.

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## Annex

## THE DIFFERENT TRAINING PROGRAMMES ENVISAGED AND THE CORRESPONDING LEVELS REQUIRED

### Profile 1

### MINING GEOLOGIST

The geologist will be required to monitor exploration projects in order to assess exploitable tonnages, to select areas for exploitation, to provide data that would be useful in directing such exploitation, in particular data on the presence of obstacles, and to follow the development of the contents and tonnages exploited.

After the training programme, the candidate would therefore acquire:

Sound knowledge of marine geology, minerology and geochemistry;

Thorough knowledge of seabed prospecting and sampling methods;

Experience in deposit evaluation techniques, particularly in geostatistics and automated cartography;

Knowledge of methods of exploitation and development of mineral nodules, as well as of the mining economics of the minerals in question (manganese, nickel, cobalt, copper).

It is therefore proposed that the trainee should take a long (nine months) refresher course, such as those organized by the Centre d'Enseignement Supérieur en Exploration et Valorisation des ressources minérales (CESEV) (Centre for Advanced Studies in the Exploration and Development of Mineral Resources) at Nancy, under the auspices of the Centre d'Etudes Supérieures des Matières Premières (CESMAT) (Centre for Advanced Studies in Raw Materials), to be supplemented by a course in economics and mining strategy (Ecole des Mines de Paris - CESMAT) (Paris School of Mining - CESMAT) and a course in geostatistics applied to the evaluation of deposits (Centre de Géostatistique, ENS Mines Paris, Fontainebleau).

Upon completing these courses, the trainee will join the team of the Department of Marine Geosciences of IFREMER, which is responsible for exploring the site reserved for the International Authority (1992-947). He will participate in marine projects and in the analysis of their results. He may complete his training by taking the courses of the DEA in marine geosciences at the University of Brest.

/...

## Profile 2

## GEOPHYSICIST

The geophysicist will be responsible for exploration projects using prospecting techniques that are mainly geophysical and require a mastery of physical data processing techniques.

After the training programme, the candidate would therefore acquire:

Basic knowledge of acoustics, optics, signal processing and applied geophysics;

Sound knowledge of geology and marine geophysics;

Experience in seabed prospecting methods (positioning, bathymetry, acoustic sounding, seismology, photography and television) and in analogical and digital data processing techniques;

Familiarity with the methods for evaluating deposits, and with the exploitation technologies to be employed.

It is proposed that the candidate should pursue a training programme based on the DEA "Méthodes quantitatives des géosciences" (Quantitative methods in geoscience), organized jointly by the Institut français du pétrole, l'Ecole Nationale Supérieure des Mines de Paris, l'Ecole nationale supérieure du pétrole et des moteurs, l'Institut de physique du globe de Paris and l'Université Pierre et Marie Curie. More specifically petroleum-oriented courses may be replaced in some cases by courses taught in institutions that provide training in geology and mining economy.

After completing this programme the trainee will join the team of the Department of Marine Geosciences of IFREMER, which is responsible for exploring the site reserved for the International Authority (1992-947). He will participate in marine projects and in the analysis of their results. He may complete his training by pursuing the DEA courses in marine geosciences at the University of Brest.

## Profile 3

## MECHANICAL ENGINEERING

This course is specially designed to train the engineer to determine, on the basis of data acquired through exploration, the basic specifications of the equipment necessary for the exploitation of the deposit. He will help to select the appropriate technologies the transfer of which may be requested, to choose the equipment and to integrate the components. Later, he may join one of the production, maintenance or exploitation teams. During the exploration phase, he may be assigned responsibility for the sample-retrieval equipment and for the mechanical components of the prospecting gear.

/...

After the training programme, the candidate would therefore acquire:

Sound knowledge of mechanics and hydraulics;

Thorough knowledge of marine engineering, naval architecture, the technology of hydraulic transport, offshore oil-drilling techniques, equipment maintenance;

Familiarity with the geological, physical-chemical, oceanic-meteorological and biological environment of nodule deposits, and the application of exploration techniques.

It is proposed that the selected candidate should pursue a long training course based on the specialized masters degree in naval architecture of the Ecole nationale supérieure des techniques avancées (ENSTA). This training could be adapted to fill the gaps in knowledge not covered in the normal programme, by specialized courses offered at ENSTA and other Paris institutions.

After completing his training programme, the trainee will join the IFREMER team responsible for the technological monitoring of the techniques for the exploitation of nodule deposits (Toulon?). He may also help to develop the instruments for exploring the deep ocean bed under the Néréis Programme.

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LOS/PCN/TP/1992/CRP.5
24 January 1992

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Tenth session
Kingston, Jamaica
24 February-13 March 1992

## INFORMATION ON A REVISED TRAINING PROGRAMME

Submitted by the delegation of Japan

1. Under this programme Japan is prepared to receive three trainees, one for each of the following disciplines for a training period of approximately 10 months beginning in May 1993:

(i) Geology;

(ii) Geophysics;

(iii) Electronic engineering.

Details of the training programmes for each discipline are contained in the annex to the present paper.

2. The programme will be divided into the following four phases:

First phase (about 5 weeks). General orientation including the Japanese language course at the Training Centre of the Japan International Cooperation Agency (JICA). Although the training will be carried out in English, learning the minimum Japanese language will help the trainees to adapt themselves to living in Japan.

Second phase (about 17 weeks). Theoretical and practical training in each discipline organized by the Geological Survey of Japan (GSJ). GSJ, founded in 1882, is a well-established earth science research institute, belonging to the Agency of Industrial Science and Technology (AIST) of the Ministry of International Trade and Industry (MITI). The institute is

/...

equipped with one of the best facilities and is staffed with first-class researchers in the field of earth science in Japan. The trainees could utilize these facilities, and lectures will be given by its researchers and visiting experts.

Third phase (about 6 weeks). Practical training by Deep Ocean Resources Development Co., Ltd. (DORD) on board the research vessel. The trainees will go on board at Honolulu, Hawaii, and return to the same port.

Fourth phase (about 13 weeks). Continuation of the second phase of training, in particular, research on the subjects chosen by trainees based on the result of the prior phases in the programme. At the end of the training period, the trainees are required to make a report of the training, which will be transmitted to the Training Panel of the Preparatory Commission together with a full description of the training provided.

3. Qualifications of applicants. Applicants should:

(i) Be nominated by both the Preparatory Commission and their Governments;

(ii) Be university graduates or the equivalent who have basic knowledge of geology, geophysics or electric and electronic engineering with occupational experience of more than two years;

(iii) Have a sufficient command of spoken and written English;

(iv) Be not more than 40 years of age;

(v) Be in good health, both physically and mentally, to undergo training.

4. Allowances and expenses. The following expenses will be borne by the Japanese side:

(i) Return air ticket (economy class) between a main international airport in the trainee's country and Tokyo, and also between Hawaii and Japan;

(ii) Accommodation and breakfast at the Training Centre of JICA, per diem (including while on board the vessels) and other miscellaneous expenses;

(iii) Medical care during the training period.

/...

# Annex

# THE TRAINING PROGRAMMES

## Profile 1

## Geology

In this discipline, the trainee is expected to acquire the scientific knowledge and techniques necessary to carry out the following functions:

(i) Analysis and summarization of geological data obtained at the site reserved for the Authority;

(ii) Establishing and management of a geological database;

(iii) Supervising or monitoring of exploration activities at a site reserved for the Authority;

(iv) Selection of an area for mining.

To achieve this end, theoretical and practical training will be offered to the trainee in the following fields:

In the second phase:

- Petrography, mineralogy and geochemistry of manganese nodules;
- Characteristics of deep-sea pelagic sediments as the substratum of nodules;
- Occurrence and genesis of nodules;
- Systematic method for exploring nodules;
- Evaluation method for nodules as ore reserves and exploitable reserves.

In the third phase (on-board training):

- Planning of exploration cruise;
- Sampling of nodules and sediments;
- Observation with a continuous deep-sea camera (CDC), description of nodules and sediments and measurement of abundance from photographs;
- Chemical analysis of nodules;

/...

- Calculation of the exact position of towed fish;
- Data processing and statistical calculation of geological data;
- Calculation method for ore reserves.

In the fourth phase:

- Research on the subjects chosen by the trainee based on the result of the prior phases of the programme;
- Assistance in making a report, as necessary.

Candidates should have a basic knowledge of marine geology, sedimentology, mineralogy and geochemistry.

## Profile 2

## Geophysics

In this discipline, the trainee is expected to acquire the scientific knowledge and techniques necessary to carry out the following functions:

(i) Supervision of mineral exploration work with the integrated use of geophysical techniques;

(ii) Evaluation, selection and use of optimal technological geophysical systems at different stages of exploration;

(iii) Computer processing and comprehensive quantitative and qualitative interpretation of geophysical data;

(iv) Computer plotting of the resulting geophysical maps;

(v) Evaluation of the exploration programme.

To achieve this end, theoretical and practical training will be offered to the trainee in the following fields:

In the second phase:

- Systematic method for exploring nodules;
- Processing and interpretation of digital geophysical data, such as satellite positioning, acoustic sounding, geomagnetic and gravity data;
- Interpretation of sub-bottom profiling data.

/...

In the third phase (on-board training):

- Planning of exploration cruise;
- Acoustic methods of nodule exploration for such purposes as drawing a topographic map, inferring sub-bottom structure, estimating nodule abundance and drawing a sound-pressure map;
- Computer processing and filing of acoustic data;
- Positioning technique;
- Measurement of physical properties of water by the Conductivity Temperature Depth (CTD) system.

In the fourth phase:

- Research on the subjects chosen by the trainee based on the results of the prior phases of the programme;
- Assistance in making a report, as necessary.

Candidates should have a basic knowledge of acoustics, geophysics, signal processing and data processing. A sound knowledge of geology and marine geology is also required.

## Profile 3

## Electronic engineering

In this discipline, the trainee is expected to acquire the basic knowledge and techniques necessary to operate and maintain on-board equipment for nodule exploration, such as the following:

(i) Navy Navigation Satellite System, Global Positioning System;

(ii) Narrow Beam Sounder, Precision Depth Recorder, Sub-bottom Profiler, Multi-beam Echosounder;

(iii) Multi-frequency Exploration System;

(iv) Conductivity Temperature Depth System;

(v) Continuous Deep Sea Camera.

To achieve this end, theoretical and practical training will be offered to the trainee in the following fields:

In the second phase:

- Similar programme to be offered to a geophysicist depending on his or her knowledge of geophysics and data processing;

- Study of acoustic instruments, sampling apparatuses, photographic instruments, data-processing system and positioning system;

- On-board practice on the operation and maintenance of positioning system, acoustic instruments and data-processing computer during a GSJ research cruise (maximum 40 days).

In the third phase (on-board training):

- Planning of exploration cruise;

- Operation of acoustic instruments, sampling apparatuses, photographic instruments, data-processing system and positioning system;

- Technology for the maintenance of above-mentioned instruments;

- Recording of the repair and usage of the instruments.

In the fourth phase:

- Supplementary work for both the second and third phases;

- Assistance in making a report, as necessary.

Candidates should have a basic knowledge of electric and electronic engineering. A sound knowledge of marine geophysics and data processing is preferred.

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LOS PCN/TP/1992/CRP.5/Corr.1
30 March 1992

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Tenth session
Kingston, Jamaica
24 February-13 March 1992

# INFORMATION ON A REVISED TRAINING PROGRAMME

## Submitted by the delegation of Japan

## Corrigendum

### Page 6, last paragraph

In the first line, delete the words "electric and".

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LOS/PCN/TP/1992/CRP.8
7 July 1992

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 10-21 August 1992

# TRAINING PROGRAMME FOR THE PREPARATORY COMMISSION OF THE INTERNATIONAL SEABED AUTHORITY AS REQUIRED OF PIONEER INVESTORS

## Revised proposal submitted by the delegation of India

1. Pursuant to paragraph 12 (a) (ii) of resolution II governing preparatory investment in pioneer activities relating to polymetallic nodules and the understanding concerning the fulfilment of obligations of registered pioneer investors dated 30 August 1990. India, as a registered pioneer investor, is prepared to receive three trainees for a period of 10 months beginning in October 1993. The outline of the training programme is presented in the following sections. Details of the training profile are given in the annex to the present document.

2. The proposed training programme provides for one traineeship in each of the following disciplines:

- mining geology;
- exploration geophysics;
- chemical engineering.

3. The training programme will cover theoretical as well as practical aspects, including on-board training, followed up finally by project work. The programme content for the initial period of 12 weeks is common for all 3 disciplines, including an 8-week orientation course and 4 weeks of on-board training to provide the essential background to each trainee.

4. The training programme will be organized at the leading institutions of the country engaged in India's Polymetallic Nodules Programme. These include the National Institute of Oceanography (NIO), Goa; the National Metallurgical Laboratory (Jamshedpur); the Regional Research Laboratory (Bhubaneswar); and Hindustan Zinc Limited (Udaipur). In addition, other premier national institutes will also be participating in executing the training programme.

5. Qualifications of the trainees:

(i) Master's degree in science (geology, geophysics) for Profiles 1 and 2, and graduate degree in chemical or metallurgical engineering for Profile 3;

(ii) Two years' experience in candidate's respective specialization;

(iii) Field/in-plant experience desirable;

(iv) Upper age limit: 35 years;

(v) Proficiency in English, both oral and written;

(vi) Candidate must be in good health, physically and mentally, to undergo training in the laboratory and on board vessel.

6. Allowances and expenses. The Government of India will provide:

(i) Economy-class return airfare between the nearest airport to place of work in his country and Goa or other concerned city in India where training is imparted;

(ii) Free board and lodging at the places of training in India;

(iii) Per diem at Rs 100 per day;

(iv) Internal travel costs;

(v) Medical care during the training period.

7. General

The trainees should be nominated by their Government and designated by the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea.

The training will commence three months after selection of the candidates by the Training Panel and their subsequent designation and notification by the Preparatory Commission.

/...

During the training period, the trainee will report periodically to the institution where he is undergoing training and also to the Department of Ocean Development, Government of India, Bloc 12, CGO Complex, Lodi Road, New Delhi, the results of the training. He will also submit a report at the end of the training period on the work accomplished during the practical stage.

The Training Panel of the Preparatory Commission will be informed about the progress of the training programme during the training period.

/...

## Annex

## THE TRAINING PROGRAMMES

### Profile 1

### MINING GEOLOGY

1. In this discipline, the trainee, on completion of the training, is expected to acquire the necessary knowledge and skills to carry out the following functions:

(i) Planning, supervision and monitoring of geological exploration activities for polymetallic nodules;

(ii) Establishment and management of geological database;

(iii) Data analysis, processing and synthesis;

(iv) Resource evaluation using geostatistical methods;

(v) Identification of areas suitable for mining.

2. In order to achieve the necessary knowledge and skills, theoretical and practical training will be offered in different phases:

| | | |
|---|---|---|
| Phase I: | Orientation lectures and related practicals at NIO, Goa | 8 weeks |
| Phase II: | On-board training (first cruise) | 4 |
| Phase III: | Lectures and practicals covering specific topics in detail | 8 |
| Phase IV: | On-board training (second cruise) | 4 |
| Phase V: | Training at other national institutions | 4 |
| Phase VI: | Project work | 12 |
| | Total | 40 weeks |

3. The subjects to be covered under theoretical and practical aspects under phases I, III and V will include the following:

(a) General introduction to marine geology and marine mineral resources;

/...

(b) Methods in marine mineral exploration;

(c) Methods specific to exploration of polymetallic nodules;

(d) Petrography, mineralogy and geochemistry of manganese nodules;

(e) Sedimentology;

(f) Data processing and management of database;

(g) Resource evaluation;

(h) Marine ecology covering collection of baseline environmental data;

(i) Environmental impact of deep seabed mining;

(j) Analytical instrument techniques.

4. The on-board training under phases II and IV will cover the following aspects:

(a) Planning of exploration cruises;

(b) Exposure to various sampling equipment;

(c) Methods of sampling and storage;

(d) Underwater data collection with multi-beam sonar, gravimeter, magnetometer;

(e) Data processing, map generation and interpretation of bathymetric maps;

(f) Underwater photography and interpretation of seabed photographs.

5. Under the project work in Phase VI, the trainee will select a topic for project work covered in the earlier phases and prepare a detailed report under the guidance of an expert of the institute where the training is provided.

## Profile 2

## EXPLORATION GEOPHYSICS

1. On completion of the training, the trainee is expected to acquire the knowledge and skills to carry out the following functions:

(i) Planning, supervision and monitoring of geophysical exploration programme;

/...

(ii) Collection of geophysical data processing and comprehensive presentation of various geophysical data;

(iii) Analysis and synthesis of geophysical data;

(iv) Evaluation, selection and use of appropriate geophysical techniques at different stages of exploration;

(v) Computerized plotting of geophysical maps and their interpretation.

2. In order to achieve the required knowledge and skill, theoretical as well as practical training will be offered to the trainee in the following phases set out below:

| | | |
|---|---|---|
| Phase I: | Orientation lecture and practicals at NIO, Goa | 8 weeks |
| Phase II: | On-board training (first cruise) | 4 |
| Phase III: | Lecture and practicals in specific topics at NIO, Goa | 8 |
| Phase IV: | On-board training (second cruise) | 4 |
| Phase V: | Training at other national institute(s) | 4 |
| Phase VI: | Project work | 12 |
| | Total | 40 weeks |

3. The topics to be covered under phases I, III and V will include the following:

(a) Theoretical basics, instrumentation and data acquisition techniques in the conventional marine geophysical methods (viz., bathymetry, magnetic, gravity, seismic reflection and refraction technique);

(b) Systematics of processing, reduction, presentation and interpretation of geophysical data;

(c) Position fixing for marine surveys; methods and processing of navigational data;

(d) Introduction to the theory of sea-floor spreading and plate tectonics and study of associated features using geophysical techniques;

(e) Use of integrated geophysical techniques for mineral exploration; some case studies;

(f) Processing of bathymetric, magnetic and gravity data using a computer;

(g) Generation of various data presentation maps using a computer (position plot, profiles, annotated maps, contour maps);

(h) Magnetic and gravity modelling;

(i) Interpretation of seismic reflection/refraction records.

4. The topics to be covered during on-board training in phases II and IV will include:

(a) Planning exploration cruises;

(b) Exposure to geophysical data acquisition systems;

(c) Data acquisition (bathymetric, magnetic, gravity and seismic);

(d) Preliminary data processing and map generation using on-board computers.

5. In phase VI of the training programme, the trainee will select a topic for project work covered in the training programme and prepare a detailed report under the guidance of an expert of the institute where the training is offered.

## Profile 3

## CHEMICAL ENGINEERING

1. On completion of the training, the trainee is expected to acquire the knowledge and skills to carry out the following functions:

(i) Comparison of various processes for treatment of polymetallic nodules;

(ii) Use of various analytical techniques for analysis of nodules as well as intermediate and final products;

(iii) Organization of test campaigns for a given process route;

(iv) Development of an approach for mass and energy balance for nodule-based processes;

(v) Use of scale-up techniques relevant to critical process steps.

2. In order to achieve the required knowledge and skills, theoretical and practical training will be offered in different phases, as set out below:

| | | |
|---|---|---|
| Phase I: | Orientation lecture and related practicals at NIO, Goa | 8 weeks |
| Phase II: | On-board training (first cruise) | 4 |
| Phase III: | Lecture series and practicals covering specific topics in extractive metallurgy in detail at national institutes engaged in development of processes for extraction of metals from nodules | 20 |
| Phase IV: | Project work | 8 |
| | Total | 40 weeks |

3. The subjects to be covered under theoretical and practical aspects in phases I and III will include the following:

(a) Distribution of nodules;

(b) Mineralogical, petrological and chemical characteristics of nodules;

(c) Instrumentation methods of analysis of nodules and associated sediments;

(d) Unit operations of processing of nodules;

(e) Techniques of solubilization of nodules;

(f) Chemical pretreatment of nodules for enhancing solubilization (sulphatization, chloridization, etc.);

(g) Approaches to solution purification;

(h) Design and operation of mixer/settler units for recovery of various metals from nodules;

(i) Techniques of recovery of cobalt from residues;

(j) Use of computers for material and energy balance computations;

(k) Flow sheeting: applications for design of nodule treatment plants;

(l) Status of technological development for processing of nodules;

/...

(m) Environmental aspects related to effluent treatment and residue disposal.

4. The on-board training under phase II will cover the following aspects:

(a) Exposure to oceanic environment;

(b) Techniques of sample collection of nodules;

(c) Exposure to various survey and exploration techniques;

(d) General interpretation of various data and maps generated on board.

5. In phase IV of the training programme, the trainee will select a topic for project work covered in the training programme and prepare a detailed report under the guidance of an expert of the institute where the training is offered.

/...

LOS/PCN/TP/1992/CRP.8/Corr.1
12 August 1992

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 10-21 August 1992

# TRAINING PROGRAMME FOR THE PREPARATORY COMMISSION OF THE INTERNATIONAL SEABED AUTHORITY AS REQUIRED OF PIONEER INVESTORS

## Revised proposal submitted by the delegation of India

## Corrigendum

Page 2, paragraph 5 (iv)

For 35 read 40

Page 5, paragraph 3 (h)

For baseline read basic

/...

LOS/PCN/TP/1992/CRP.8/Corr.2
2 September 1993

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA

# TRAINING PROGRAMME FOR THE PREPARATORY COMMISSION OF THE INTERNATIONAL SEABED AUTHORITY AS REQUIRED OF PIONEER INVESTORS

## Revised proposal submitted by the delegation of India

## Corrigendum

Page 1, paragraph 1

Replace the second sentence with the following:

> India, as a registered pioneer investor, is prepared to receive three trainees for a period of 10 months. The traineeships in mining geology and exploration geophysics will begin in October 1993. The traineeship in chemical engineering will begin at the end of 1994. The exact month for the commencement of that traineeship will be intimated by India as soon as the candidate is selected by the Training Panel at its next meeting, which is expected to be held in early 1994.

/...

LOS/PCN/TP/1992/CRP.10
3 August 1992
ENGLISH
ORIGINAL: ENGLISH/FRENCH/
SPANISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 10-21 August 1992

# SYNOPSIS OF APPLICATIONS SUBMITTED FOR TRAINEESHIPS UNDER THE TRAINING PROGRAMMES OFFERED BY FRANCE AND JAPAN

## Note by the Secretariat

## INTRODUCTION

The present document was prepared by the Secretariat for the convenience of the members of the Training Panel. It is an abridgement of "Summary sheets of applications submitted for traineeships under the training programmes offered by France and Japan", contained in document LOS/PCN/TP/1992/CRP.9 and does not include the explanatory notes from the nominee and the nominating Government.

## FRANCE - MINING GEOLOGY AND GEOLOGICAL DATA PROCESSING

Name: AL-SULEIMANY, Zaher Bin Khalid Bin Suleiman (Oman)

Education: B.Sc., Geology

Training: Various training programmes in mineral geology (BRGM France). Presently attending higher studies in Switzerland

Languages other than mother tongue: English (6-week course), French (3-month course)

Present function(s): Geologist, Ministry of Petroleum and Minerals

Previous position(s):

Experience in the field: Study of carbonate and continental detrital facies in various French basins

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Name: BIRDJO, Hamit (Chad)

Education: Diplôme d'Etudes Pratiques Scientifiques

Training: Geophysics applied to hydrogeological research (France). Training in oil prospecting (Switzerland). Traineeship in business administration (France)

Languages other than mother tongue:

Present function(s): Research engineer in geology, Ministry of Mines, Petroleum and Energy
(1990- ) Teaching assistant, Faculty of Sciences, Department of Geology

Previous position(s): (1981-1982) Instructor, mathematics and physics

Experience in the field: Frequent geological field expeditions during studies (cartography, tectonic sedimentology and palaeoenvironment)

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Name: BRAHAM, Ahmed (Tunisia)

Education: Diplôme d'Etudes Approfondies in Geology; Technical Engineering Diploma in Applied Geology

Training: Participated in national strategic research programmes

Languages other than mother tongue: French

Present function(s): (1986- ) Geological engineer, Division of Geological Engineering, National Office of Mines

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Previous position(s):

Experience in the field: As part of support programme for mining companies, did work in geology and drilling follow-up and took part in the discovery of two lodes. Participated in the study of two mining sites

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Name: CASTAN, Juan Campos (Mexico)

Education: (1988- ) Candidate for graduate degree in geological engineering

Training:

Languages other than mother tongue: French (reading and speaking), English (reading and speaking), Italian (reading)

Present function(s): (1979- ) Head, Department of Marine Geology, Navy Secretariat

Previous position(s): Professor of Geophysical Engineering (oceanography course)
(1977-1980) Department of Medium- and Small-scale Industries (S.P.F.I.): Chief, Office of Extractive Industries and Construction Materials; Investment adviser - assessment of non-metallic mineral deposits and elaboration of projects for industrial plant installation

Experience in the field: Did studies of the sedimentology, microfauna, geochemistry and geomorphology of the continental shelves and slopes of the Gulf of Mexico and the Pacific Ocean and of the coastal areas
Participated in various oceanographic expeditions

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Name: GONÇALVES DE SOUZA, Kaiser (Brazil)

Education: Ph.D., Earth Sciences (Paris); Diplôme d'Etudes Approfondies - Geotectonics (Paris); Diploma in Geology

Training: Applicant has participated in a number of conferences

Languages other than mother tongue: Fluent in spoken French and English - reading and writing good, Spanish (good), German (satisfactory-good)

Present function(s): (November 1991- ) Post-doctoral work at the Federal Institute of Geosciences and Natural Resources, Germany

Previous position(s): (1986-1991) Collaboration work (Centro Nacional de Pesquizas, Brasilia; Paris University; Columbia University; Petrobas Oil Company, Rio de Janeiro; Cambridge University)
(March-December 1983) Laboratory assistant in geochemistry, Department of Geology, Vale do Rio dos Sinos University, Brazil
(March-December 1980, 1981, 1982) Laboratory assistant in Experimental Chemistry, Department of Chemistry, Vale do Rio dos Sinos University

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Experience in the field: Extensive field and laboratory experience. Seismic profiling analysis and SEASAT data. Participated in three cruises

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Name: KOUNGIOV, Sider Iassenov (Bulgaria)

Education: Doctor of Philosophy in the Geological and Mineralogical Sciences; Diploma - Mining Engineer-Geologist

Training:

Languages other than mother tongue: French, English, Russian

Present function(s): Works at the Department of Scientific Survey, Geology and Geophysics Joint-Stock Company, Sofia

Previous position(s): (1987-1990) Worked in uranium mines
(1983-1987) Explored the structure and mineral composition of Zn-Pb-Ag deposits
(1980-1983) Worked in Rodops

Experience in the field: Structural and mineral composition of Zn-Pb-Ag deposits

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Name: NDIAYE, Mamadou (Senegal)

Education: Engineering Diploma (France); Attestation de Technicien Supérieur in Geographical Studies and Projects (Paris); Brevet de Technicien Supérieur in Geometry (Paris); Diplôme Universitaire d'Etudes Scientifiques, level 1, in Physics and Chemistry

Training: Engineering traineeships with the Société Sénégalaise des Phosphates in Thies and with Mine d'Or, France. Studies in dispatching with Charbonnage de France

Languages other than mother tongue: English, Spanish

Present function(s): (1988- ) Chief, Thies Regional Mining and Geology Service

Previous position(s): (1975-1984) Advanced Technician, Department of Geographical Projects, Ministry of Equipment

Experience in the field: Topographical and levelling work. Worked on plotting the gravimetric map of Senegal

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Name: SILVA NIETO, Diego Gonzalo (Argentina)

Education: Licenciatura in Geological Science

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Training: Remote sensing technology (Japan); Remote sensing (Argentina). Computer courses

Languages other than mother tongue: English

Present function(s): (1979- ) Geologist, National Department of Mining

Previous position(s):

Experience in the field: Geological surveying and analysis projects. Geological consultant for the laying of high-tension lines

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Name: PIRMEZ, Carlos (Brazil)

Education: (Expected in 1992) Doctor of Philosophy (Columbia University); Master of Philosophy (Columbia); M.A. (Columbia); B.Sc., Oceanography

Training:

Languages other than mother tongue: Fluent in French, English and Spanish

Present function(s): (1990- ) Graduate research assistant, Lamont-Doherty Geological Observatory of Columbia University
(1987- ) Junior research scientist, Universidade Federal Fluminense (UFF), Rio de Janeiro State

Previous position(s): (1988) Teaching assistant to the course "Introduction to the Earth Sciences" and to the course "Geophysical Theory I" at Columbia University
(1984-1986) Research assistant, Marine Geology Laboratory, UFF
(1984) Consultant to Fermisa Mineraçao Ltd.

Experience in the field: Applicant has taken part in six scientific expeditions dealing with, *inter alia*, stratigraphic investigations and seismic reflection surveys.

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Name: STOYANOV, Ilya Kirilov (Bulgaria)

Education: Diploma - Geological Engineer-Hydrogeologist

Training:

Languages other than mother tongue: French, Russian (spoken and written)

Present function(s): Geological Engineer-Hydrogeologist, Department of Scientific Surveys, Geology and Geophysics Joint-Stock Company, Sofia

Previous position(s): (1984-1992) Research Scientist in engineering geology and hydrogeology, Research Scientific Institute of Mineral Resources (NIPI)
(1979-1984) Specialist in engineering geology and hydrogeology, NIPI

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Experience in the field: Laboratory and in situ studies of the physical-mechanical (strength) properties of bottom sediments

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Name: TUN, Than (Myanmar)

Education: B.Sc., Geology

Training:

Languages other than mother tongue: English (good)

Present function(s): (1992- ) Assistant Senior Geologist, Geological Survey and Mineral Exploration

Previous position(s): (1985-1991) Geologist Grade IV, Geological Survey and Mineral Exploration
(1979-1985) Geologist Grade V

Experience in the field:

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## JAPAN - GEOLOGY

Name: ABDELGADER, Essam Eldin Mohamed (Sudan)

Education: B.Sc., Geology (Egypt)

Training: Atomic Absorption Spectrometer Applied to Geochemical Prospecting

Languages other than mother tongue: English (6-month course)

Present function(s): Geologist, Geological Research Authority of Sudan (GRAS), Department of Prospecting and Exploration

Previous position(s): (1986) Assistant Geologist, GRAS

Experience in the field: Exploration for gold and chromite

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Name: ABUURU, Douglas M. (Kenya)

Education: M.Sc., Geology; B.Sc., Geology

Training: Seismic Refraction Data Digestion and Interpretation (Germany)

Languages other than mother tongue:

Present function(s): (1989- ) Geologist

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Previous position(s):

Experience in the field:

Relevant documents of the applicant have not yet been received

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Name: BONG, Li Sok (Democratic People's Republic of Korea)

Education: Geology (6 years)

Training:

Languages other than mother tongue: English (reading excellent, written very good, spoken good)

Present function(s): (1988- ) Field Surveyor, Central Mineral Prospecting Corps, Ministry of Natural Resources Development

Previous position(s):

Experience in the field:

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Name: CARRANZA, Emmanuel John (Philippines)

Education: Postgraduate Diploma in Mineral Exploration (The Netherlands); B.Sc., Geology

Training:

Languages other than mother tongue: English (excellent), Spanish (elementary)

Present function(s): (1988- ) Senior Geologist, Geology Division Mines Sector, Department of Environment and Natural Resources

Previous position(s): (1983-1988) Geologist, Geological Survey Section, Bureau of Mines and Geo-sciences

Experience in the field: Not clear. In his present function, the applicant conducts geological and mineral surveys, and assessment of mineral resources

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Name: DONCHEVA, Valentina Georgieva (Bulgaria)

Education: B.Sc., Geology

Training:

Languages other than mother tongue: English, Russian

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Present function(s): (1988- ) Geologist, Department of Marine Geology and Geochemistry, Institute of Oceanology, Varna

Previous position(s):

Experience in the field:

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Name: EVSTATIEV, Dimitar Marinov (Bulgaria)

Education: Diploma - Geological-Engineer; Studies in Hydro-melioration construction

Training:

Languages other than mother tongue: English, Russian, German

Present function(s): (July 1991- ) Geologist, International Cooperation Department, Committee of Geology and Mineral Resources

Previous position(s): (August 1987-July 1991) Information Analyst, Geological Information and Informatics, Scientific-Research Institute for Mineral Resources
(September 1984-August 1987) Sampling Assistant, Dressing Laboratory, Geological Research Laboratory Enterprise, Sofia

Experience in the field: Eight years field geology - sample-taking and preparation

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Name: FERNANDEZ, Miguel Sócrates Ibarra (Mexico)

Education: Geological engineer

Training: Courses in cartographic projection, micro-computers, statistics

Languages other than mother tongue: English, French

Present function(s): Geological engineer, Naval Lieutenant S.I. Geol.

Previous position(s):

Experience in the field: Practical field experience as a student in petroleum geology in Mexican oil fields. Practical experience in mining geology

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Name: GAERLAN, Socrates (Philippines)

Education: B.Sc., Geology

Training:

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Languages other than mother tongue: English (good)

Present function(s): (July 1990- ) Senior Geologist, Department of Environment and Natural Resources (DENR), Region I

Previous position(s): (November 1986-July 1990) Geologist, DENR, Region I

Experience in the field:

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Name: IVANOV, Blagoy Evlogiev (Bulgaria)

Education: Diploma - Engineer and Geologist in minerals and ores prospecting

Training:

Languages other than mother tongue: English (5-month course), Russian (fluent)

Present function(s): (1988- ) Researcher, Department of Marine Geology, Geological Institute of the Bulgarian Academy of Sciences

Previous position(s):

Experience in the field: Marine geology and clay mineralogy: X-ray investigations of clay minerals, lithology and sedimentology; computer data processing. Participated in a number of scientific cruises

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Name: KAGASI, J. K. (Kenya)

Education: M.Sc., Geology; B.Sc., Geology

Training: Courses in hydrogeological tracing techniques; remote sensing and photogeology; and Precambrian geology

Languages other than mother tongue:

Present function(s): (1979- ) Geologist 1
Member of the Kenyan delegation to the Preparatory Commission

Previous position(s):

Experience in the field:

Relevant documents of the applicant have not yet been received

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Name: KOHPINA, Pramuan (Thailand)

Education: M.Sc., Economic Geology (United States); B.Sc., Geology

Training: Eleven months' training at the Geothermal Institute of New Zealand

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Languages other than mother tongue: English

Present function(s): (1989- ) Geologist, Offshore Mineral Exploration and Remote Sensing Sub-Division, Economic Geology Division, Department of Mineral Resources (DMR)

Previous position(s): (1983-1985) Geologist, DMR

Experience in the field:

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Name: MANCHEV, Trudolyub Stefanov (Bulgaria)

Education: Postgraduate studies in Petroleum Geology - to be defended for Ph.D. (St. Petersburg); Diploma - Mining Engineer-Geologist (St. Petersburg)

Training: Computer programing in surface and three-dimensional geological constructions

Languages other than mother tongue: English (good), Russian (fluent)

Present function(s): (1983- ) Marine Geologist, Geological Exploration Enterprise, Committee of Geology and Mineral Resources, Varna

Previous position(s):

Experience in the field: Marine drilling and exploration, including well servicing

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Name: MOEZABADI, Mohammad Karamati (Islamic Republic of Iran)

Education: Ph.D., Petroleum-Geology (India); Master of Technology in Applied Geology (India); B.Sc., Geology (India)

Training:

Languages other than mother tongue: English

Present function(s): Head of Geology Section, Geochemistry Division, RIPI, National Iranian Oil Company, Tehran

Previous position(s): Associated with the Institute of Petroleum Exploration, India

Experience in the field: Petroleum exploration, seismic method and source rock evaluation

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Name: NDIAYE, Mamadou (Senegal) - See page 4 of this document.

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Name: NEUFVILLE, Laurence N. (Jamaica)

Education: B.Sc., Geology/Geography

Training: Attended two seminars, one on managing environmental risk. Basic Computer Programing and LOTUS 1-2-3

Languages other than mother tongue:

Present function(s): (1989- ) Geologist, Inspector of Mines and Environmental Officer, Ministry of Production, Mining and Commerce, Kingston

Previous position(s): (1989-1990) Part-time Teacher, Titchfield High School
(1987-1988) Teacher - 6th Form
(1982-1983) Teacher - 1st-5th Form

Experience in the field: Three years in field geology

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Name: OCEGUERA MIRANDA, Enrique (Mexico)

Education: Geological engineer

Training: Introductory course in the use of the Micro-Isis package. Training in hardware (National Oceanographic Bibliographical Service). Courses given by the Management and Systems Department, Navy Secretariat

Languages other than mother tongue:

Present function(s): Geological Engineer, Naval Lieutenant S.I. Geol.
(March 1990- ) Installation, handling and operation of software for the National Oceanographic Bibliographical Service
Directory of human resources in the field of oceanography: setting up a computer software-package database in DBASE III-PLUS for storing information.
Reviewing foreign applications for permission to conduct oceanographic research in waters under Mexican jurisdiction, National Oceanographic Data Centre

Previous position(s): (1988-1989) Chief, Department of Geohydrology, Federal Electricity Commission
(1987-1988) Project Director, thermoelectric power plant project. Technical support, peninsular thermoelectrical project
(1986-1987) Technical support, nucleo-electrical project
(1983-1986) Welfare and Scholarship Service
(1982-1983) Designer for the Department of Drilling and Geohydrology, Department of Petrography and Chemistry, Federal Electricity Commission

Experience in the field: Stratigraphy and correlation of wells for the control and prevention of aquifer contamination

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Name: SRIPONGPUN, Pongsak (Thailand)

Education: M.Sc., Geology; B.Sc., Geology

Training:

Languages other than mother tongue: English

Present function(s): (1978- ) Geologist Grade 5, Section Geological Mapping, Division Geological Survey, Department of Mineral Resources, Ministry of Industry

Previous position(s):

Experience in the field: Field mapping in Thailand

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Name: SU, Pak Tae (Democratic People's Republic of Korea)

Education: Graduate course for doctorate - Oil reserve exploration; Geology - oil reserve exploration (6 years)

Training:

Languages other than mother tongue: English (reading excellent, written very good, spoken good)

Present function(s): (1992- ) Researcher, Institute of Geology, Academy of Sciences

Previous position(s):

Experience in the field:

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Name: SWE, Myint (Myanmar)

Education: Diploma in Applied Geology; B.Sc., Geology

Training: Log interpretation courses. Basic Drilling Fluid Engg. Course

Languages other than mother tongue: English (good)

Present function(s): (1989- ) Geologist Grade III, Myanma Oil and Gas Enterprise

Previous position(s): (1981-1989) Geologist Grade V, Myanma Oil and Gas Enterprise
(1980-1981) Trainee Geologist, Myanma Oil and Gas Enterprise

Experience in the field: Test well geological works and drilling fluid control

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## NO PREFERRED PROGRAMME - QUALIFIED IN GEOLOGY

Name: DARANIN, Edwin A. (Indonesia)

Education: Geology (1979-1985)

Training: Mining and Coal Utilization Techniques Course; Geophysical Logging Course; Workshop on Epithermal Gold Mineralization, ESCAP

Languages other than mother tongue:

Present function(s): Researcher, Mineral Regional Development Centre (PPTM)

Previous position(s): (1986-1991) Researcher, Regional Mineral Development Division Programme
(October-November 1984) Study of Water Resources in Jambi, Sumatera, LAPI - Bandung Institute of Technology
(1983-1985) Assistant, Sedimentography and Palaeontology Laboratory, Department of Geology, Bandung Institute of Technology
(November-December 1983) Gold Exploration in Sambas, Directorate General of Geology of Indonesia

Experience in the field: See previous positions

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Name: HERMANTORO, A. Edy (Indonesia)

Education: Undergraduate degree in Geology - Geological Engineer

Training: A number of courses, which included studying seismic field and drilling techniques, structural interpretation, three-dimensional seismic data acquisition

Languages other than mother tongue: English

Present function(s): (1987- ) Staff of Directorate of Exploration and Production, Directorate General of Oil and Gas, Minstry of Mines and Energy

Previous position(s): (1983-1987) Geologist of PT. Geoservices, consultant for the Exploration and Exploitation of the Oil and Gas Database project, under the PERTAMINA (State Oil Company)
(1980-1983) Assistant Lecturer in Structural Geology and Technical Geology, University of Pembangunan Nasional, Yogyakarta
(1978-1980) Geologist part-time, PT Gamma Epsilon, Bandung for several technical geology/soil mechanical projects

Experience in the field: See previous positions

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Name: RANAWIJAYA, Duddy Arifin Setiabudi (Indonesia)

Education: Diploma in Geological Engineering

Training: Training of Global Positioning System; ESCAP/CCOP/LEMIGAS seminar. Computer skills

Languages other than mother tongue: English (1-year course), French (presently taking private course)

Present function(s): Marine Geologist, Division of Marine Geology, Directorate General of Geology and Mineral Resources, Department of Mines and Energy

Previous position(s): (1989-1990) Assistant, Geological Exploration; Assistant, Laboratory of Sedimentology; Assistant, Laboratory of Petroleum Geology
(1984-1985) Coordinator of assistant for military knowledge of Territorial Defence, ITB
(1982-1984) Assistant, Palaeontological Laboratory

Experience in the field:

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Name: USCINOWICZ, Szymon (Poland)

Education: Doctor of Geology; M.Sc., Physical Oceanography

Training:

Languages other than mother tongue: English

Present function(s): (1980- ) Scientist, Branch of Marine Geology of the National Geological Institute, Sopot

Previous position(s): (1977-1980) Geologist, Branch of Marine Geology of the National Geological Institute, Sopot

Experience in the field: Management of research cruises. Main geologist surveying before laying of underwater telephone cables. Participated in working group of International Council for the Exploration of the Sea

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Name: WIBOWO, Adhi (Indonesia)

Education: (1990- ) Postgraduate programme - Urban and Regional Planning; Graduate in Geology

Training: A number of seminars and workshops concerning application of computer techniques for exploration. Course in Digital Image Processing

Languages other than mother tongue: English

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Present function(s): (April 1988- ) Researcher (regional geologist, regional planner), Mineral Technology Development Center, Directorate General of Mines, Ministry of Mines and Energy

Previous position(s): (August 1987-March 1988) Project Controller, Arun Test and Standby Capacity Project. PT Petroindo - Mobil Oil Indonesia
(May-July 1987) Supervisor, Deep Well Drilling. Bakaheuni Ferry Terminal Expansion Project, PT Dipati Ukur - Pacific Consultant International

Experience in the field: See previous positions

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FRANCE - EXPLORATION GEOPHYSICS

Name: CHOL, Li Byong (Democratic People's Republic of Korea)

Education: Exploration Geophysics (6 years)

Training:

Languages other than mother tongue: French (6-year course), is able to read English and Russian with the help of a dictionary

Present function(s): (1987- ) Field engineer, Central Physical Prospecting Division, Ministry of Natural Resources Development

Previous position(s):

Experience in the field:

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Name: GENEV, Anton Todorov (Bulgaria)

Education: Diploma - Geophysical Engineer

Training:

Languages other than mother tongue: French (fair), Russian (fair)

Present function(s): (1988- ) Geophysical Engineer, Main Geological Computing Center, Sofia

Previous position(s):

Experience in the field: Processing and interpretation of seismic and well-logging data

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Name: NDIAYE, Mamadou (Senegal) - See page 4 of this document.

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Name: OHN, Myint (Myanmar)

Education: B.E., Electronics

Training:

Languages other than mother tongue: English (good)

Present function(s): (1987- ) Field Geophysicist Grade III, Myanma Oil and Gas Enterprise

Previous position(s):

Experience in the field: Maintenance of geophysical field instruments

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## JAPAN - GEOPHYSICS

Name: AL-ZUBAIDI, Hussain Bin Abu Baker Bin Ahmed (Oman)

Education: B.Sc., Geology

Training: Course in geophysics at Oman Mining Company. Presently attending 2-month course in detailed classifications in geophysics and geological information (Australian Company)

Languages other than mother tongue: English

Present function(s): Geologist, Ministry of Petroleum and Minerals

Previous position(s):

Experience in the field: Topographical mapping (scale 1:2,500) Laisail unit, including boreholes and drill core logs

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Name: CHAKAROV, Peter Michailov (Bulgaria)

Education: Diploma - Engineer-Geophysicist

Training:

Languages other than mother tongue: English, Russian

Present function(s): (1991- ) Geophysicist Interpreter, Geology and Geophysics-Joint Stock Company, Sofia

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Previous position(s): (1986-1991) Group leader seismic data processing and interpretation for oil and gas, Geology and Geophysics-Joint Stock Company
(1982-1986) Seismic crew chief, Committee of Geology, Sofia

Experience in the field:

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Name: DIMITROV, Lyoubomir Ivanov (Bulgaria)

Education: Diploma - Engineer-Geophysicist

Training: Extensive knowledge of computer programing and software development. Participated in three conferences

Languages other than mother tongue: English, Russian

Present function(s): (December 1988- ) Research Associate - 2nd degree, Laboratory of Marine Geophysics, Institute of Oceanology, Varna

Previous position(s): (1985-1988) Geophysicist, Department of Marine Geomorphology and Quaternary Geology, Institute of Oceanology, Varna
(1978-1980) Laboratory Assistant, Central Factory Laboratory of Soda Plant

Experience in the field: Organizing and managing marine expeditions. Applicant spent more than one year on board research vessels

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Name: GATDULA, Abraham Abe (Philippines)

Education: Diploma Course in Exploration Geophysics (The Netherlands)
M.Sc., Oceanography; B.Sc., Geology

Training:

Languages other than mother tongue: English (good)

Present function(s): (1991- ) Supervising Geologist, Department of Environment and Natural Resources (DENR), Region I

Previous position(s): (1990-1991) Supervising Geologist, DENR, Region VI
(1988-1990) Supervising Geologist, Mines and Geosciences Bureau, DENR
(1986-1988) Senior Geologist, Mines and Geosciences Bureau, DENR
(1977-1986) Geologist, Mines and Geosciences Bureau, DENR

Experience in the field:

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Name: HWANG, Eu-Dug (Republic of Korea)

Education: Master of Engineering - Mining and Mineral Engineering; Bachelor of Engineering

Training:

Languages other than mother tongue: English

Present function(s): (September 1988- ) Mining Engineer, Overseas Resources Division, Ministry of Energy and Resources (MER)

Previous position(s): (December 1984-August 1988) Mining Safety Office, MER (1981-1983) Assistant Teacher in Mining Engineering, Kang Won National University

Experience in the field:

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Name: JOSEPH, Patrick (Seychelles)

Education: B.Sc., Geophysical Sciences (England)

Training:

Languages other than mother tongue:

Present function(s): (July 1991- ) Geophysicist, Seychelles National Oil Company

Previous position(s):

Experience in the field: Eight-week attachment with Enterprise Oil Plc., London carrying out seismic interpretation and Grav/Mag modelling for offshore data

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Name: NDIAYE, Mamadou (Senegal) - See page 4 of this document.

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Name: NICOV, Todor Nicov (Bulgaria)

Education: B.Sc., Physics - Geophysics

Training:

Languages other than mother tongue: English (fluent), Russian (fluent)

Present function(s): (1988- ) Seismic data processing analyst and geological software support, Main Geological Computing Center

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Previous position(s): (1986-1988) Seismic data processing analyst, Geofizika
(1983-1986) Senior Geophysicist of the crew, Bulgarian Oil Company and Syrte Oil Company
(1981-1983) Seismic data processing analyst, Geofizika - Sofia

Experience in the field:

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Name: OTIDO, Jotham G. (Kenya)

Education: Diploma in Mineral Exploration Geophysics (The Netherlands); Diploma in Mineral Technology; B.Sc.

Training: Seminars and workshops on Geophysics

Languages other than mother tongue:

Present function(s): (1980- ) Geophysicist

Previous position(s):

Experience in the field:

Relevant documents of the applicant have not yet been received

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Name: RODELAS, Reynaldo (Philippines)

Education: B.S.E.M. - Mining Engineering/Geology

Training: Offshore prospecting in Japan. Geophysics Workshop on High Resolution Seismic Methods in Thailand

Languages other than mother tongue: English (reading and written excellent, spoken good)

Present function(s): (1988- ) Senior Science Research Specialist (Senior Geophysicist), Mines and Geo-Sciences Bureau

Previous position(s): (1982-1987) Geophysicist, Mines and Geo-Sciences Bureau

Experience in the field: Marine geophysical exploration surveys on board research vessel using gravity, magnetic, seismic and electrical methods

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Name: RYUL, Kil Song (Democratic People's Republic of Korea)

Education: Geophysical Prospecting (6 years)

Training:

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Languages other than mother tongue: English (reading excellent, written very good, spoken good), Japanese, Russian, Chinese

Present function(s): (1987- ) Surveyor, Prospecting Corps of Pyongyang Zone, Ministry of Natural Resources Development

Previous position(s): (1984-1986) Inspector, Board of Design Inspection, Ministry of Natural Resources Development

Experience in the field:

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Name: SALVATORE, Cosmas Pitia (Sudan)

Education: B.Sc., Geophysics (Egypt)

Training: Courses in electronics; computer operation and programing

Languages other than mother tongue: English

Present function(s): (1988- ) Geophysicist at the Geological Research Authority of the Sudan (GRAS)

Previous position(s): (May-November 1985) Worked with COLCRETE Geotechnical Co., Cairo

Experience in the field: Participated in the following: a special research programme which was carried out by applying seismic, geoelectric and magnetotelluric methods; seismic exploration carried out by Western Geophysical Co.; and investigation of sedimentary basins, by the use of seismic, audio-magnetotelluric and geoelectric methods

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Name: TAEK, Kim Ryo (Democratic People's Republic of Korea)

Education: Geophysics (6 years)

Training:

Languages other than mother tongue: English (reading excellent, written very good, spoken good)

Present function(s): (1986- ) Field Engineer, Central Physical Prospecting Division, Ministry of Natural Resources Development

Previous position(s):

Experience in the field:

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Name: TERRAZAS AMADOR, Eduardo (Mexico)

Education: Graduate diploma in Seismology (Japan); Licenciatura in Geophysical Engineering

Training: Computer courses

Languages other than mother tongue: English (reading, writing, speaking), Japanese (reading)

Present function(s): (1992- ) Professor, Faculty of Engineering, National University of Mexico

Previous position(s): (August-December 1991) Chief of computation for oil industry purposes, Tulija project, state of Chiapas, for PEMEX
(November 1989-April 1991) Engineer in charge of the operation and maintenance of the seismological network for the Federal Electricity Commission, Construction Branch
(1988) Taught A-level courses at the Faculty of Engineering, National University of Mexico
(1985-1988) Prospecting and geological, geotechnical and geo-hydrological studies and use of geophysical methods of electric prospecting and vertical electrical drilling, Department of Geophysics and Instrumentation
(1984) Processing of geophysical information, and preparation of graphical presentation of geophysical results, Institute of Geophysics, Department of Geophysical Exploration

Experience in the field: See previous positions

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Name: THAN, Aye Aye (Myanmar)

Education: B.E., Electronics

Training:

Languages other than mother tongue: English (good)

Present function(s): (1984- ) Geophysicist Grade III, in charge of Service Centre for Geophysical Instruments, Myanma Oil and Gas Enterprise

Previous position(s): (1987-1990) Interpretation and Compilation in Geophysical Department, Mynama Oil and Gas Enterprise
(1985-1987) Programer in Geophysical Data Processing Centre, Myanma Oil and Gas Enterprise
(1984) Joined as geophysicist

Experience in the field:

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Name: VASSILEV, Atanas Dimitrov (Bulgaria)

Education: Ph.D. in Mathematics and Physics (Moscow); B.Sc., Geophysics

Training: Participated in a number of conferences. Computer skills

Languages other than mother tongue: Proficient in English and Russian

Present function(s): (1986- ) Research Associate 1st degree, Project Leader, Laboratory of Marine Geophysics, Institute of Oceanology

Previous position(s): (1979-1982) Geophysicist, Department of Marine Geology, Institute of Oceanology

Experience in the field: Twenty-four expeditions on board research vessels (side-scan sonar, sparkers, statistical analysis)

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NO PREFERRED PROGRAMME - QUALIFIED IN GEOPHYSICS

Name: BATAYNEH, Awni Taisir (Jordan)

Education: M.Sc., Geophysics; B.Sc., Applied Geophysics (Syria)

Training: Computer skills for gravity and magnetic surveys

Languages other than mother tongue: English

Present function(s): (1989- ) Geophysicist, Geophysics Division, Geophysics and Technical Directorate, Natural Resources Authority

Previous position(s):

Experience in the field:

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Name: ILAHUDE, Delyuzar (Indonesia)

Education: Diploma in Geophysics and Meteorology

Training:

Languages other than mother tongue: English

Present function(s): (1988- ) Geophysicist, Geophysical Division, Marine Geological Institute (MGI), Department of Mining and Energy

Previous position(s): (1984-1987) Military service
(1981-1983) Assistant Geophysicist and Oceanographer for the Department of Geophysics and Meteorology, Institute of Technology, Bandung

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Experience in the field: Participated in geological and geophysical investigations in Indonesian waters (seismic, magnetometer and coastline change)

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Name: PETECKI, Zdzislaw (Poland)

Education: M.Sc., Physics - Geophysics/Lithosphere Physics

Training:

Languages other than mother tongue: English, Russian

Present function(s): (1982- ) Geophysicist, Section of Interpretation Methods, Department of Geophysics, Polish Geological Institute

Previous position(s): (1979-1982) Geophysicist, Seismic Section, Department of Geophysics

Experience in the field:

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## FRANCE - NAVAL ENGINEERING

Name: ALIDO A., Luis Héctor (Panama)

Education: (1991- ) Maestría in Economic Engineering; Metallurgical Engineering

Training: Certificate of photography

Languages other than mother tongue: English (adequate), French (basic), Portuguese (excellent)

Present function(s): (1992- ) Head of Operations for Pic de Panama, S.A. (a company of business representatives)

Previous position(s): (1989-1992) Management Assistant, Scali, S.A. (customs brokerage firm)
(Six months) Project Adviser to Estalheiros Reunidos Verolme do Brasil, S.A.

Experience in the field: Underwater photography. Consultant in underwater one-side arc welding with ceramic backing, Astilleros Verolme do Brasil, S.A.

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Name: NDIAYE, Mamadou (Senegal) - See page 4 of this document.

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## JAPAN - ELECTRONIC ENGINEERING

Name: KYU, Mya (Myanmar)

Education: Bachelor of Engineering - Electronic Engineering

Training:

Languages other than mother tongue: English (good)

Present function(s): (1984- ) Telecom Engineer Grade III, Maintenance Engineer in Data Processing Center of Myanma Oil and Gas Enterprise

Previous position(s): (1982-1984) Telecom Engineer Grade III, Telecommunications Section of Myanma Oil and Gas Enterprise

Experience in the field:

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Name: GASQUE PEÑA, Mario Alberto (Mexico)

Education: Naval engineering; Engineer in Naval Science

Training: Training and certification in: penetrating liquids; magnetic particles, level II; ultrasound II; industrial radiography, level II

Languages other than mother tongue: English

Present function(s): (February 1992- ) Director, Department of Naval Construction and Maintenance, Navy Secretariat, Mexican Navy. Geological Engineer, Naval Lieutanent, S.I. Geol.

Previous position(s): (October 1990-January 1992) Deputy Director of Projects (construction of the vessel "Holzinger"), Navy Secretariat, Mexican Navy
(August-September 1990) Chief, Electric and Electronic Recruitment Bureau, Department of Naval Construction and Maintenance
(November 1989-July 1990) Superintendent of Plant Engineering, Naval Shipyard No. 20, Department of Naval Construction and Maintenance

Experience in the field: Application of non-destructive tests to naval construction. Course in the sailing and operation of sail boats

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Name: VALENCIA SALINAS, Mariano (Mexico)

Education: Naval Engineering; Engineer in Naval Sciences; Certificate of Studies

Training: Courses at the Industrial Research and Development Centre. Course in naval logistics. Training and certification in: industrial radiography; ultrasound, level II; magnetic particles; penetrating liquids, level II

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Languages other than mother tongue:

Present function(s): (1991- ) Director, Programming and Management Bureau, Department of Naval Construction and Maintenance
Naval Captain S.I.N.

Previous position(s): (August-November 1991) Chief of production for Repair Centre No. 11 in Chetumal

Experience in the field: Application of non-destructive tests to naval construction

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Name: MOHAMMAD-TAHERI, Mahmoud (Islamic Republic of Iran)

Education: Ph.D., Electronic Systems Engineering (England); M.Sc., Telecommunication Systems (England); B.Sc., Electronic Engineering

Training:

Languages other than mother tongue:

Present function(s): (September 1991- ) Lecturer (Assistant Professor), Department of Electrical and Computer Engineering, Tehran University

Previous position(s): (April 1990-September 1991) Project Manager, Iran Telecommunication Research Center (ITRC)
(1986-1989) Demonstrator on Telecommunication Systems, University of Essex
(1983-1985) Research Development Engineer, ITRC
(1982-1983) Design Engineer, ITRC
(1980-1982) Teacher in Vatanpour Faculty of Engineering, air force

Experience in the field: See previous positions

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Name: ZANEV, Enrico Yuliev (Bulgaria)

Education: Diploma - Geophysical Engineer

Training: Seismic Data Processing; Operating Systems

Languages other than mother tongue:

Present function(s): (September 1988- ) Gravity data processing analyst, maintenance engineer, Main Geological Computing Center, Sofia

Previous position(s):

Experience in the field:

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## NO PREFERRED PROGRAMME - NO DISCIPLINE SPECIFIED

Name: AL-MOHDAR, Alawi Mohamed (Yemen)

Education: M.Sc., Geography - Oceanology (Odessa)

Training:

Languages other than mother tongue: English (21-month course), Russian

Present function(s): Researcher in physical oceanography and meteorology of the Gulf of Aden, Marine Science and Resources Research Centre (3 years)

Previous position(s):

Experience in the field: Participated extensively in oceanographic cruises (not specified)

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Name: NASSER, Gamal Abdulla (Yemen)

Education: M.Sc., Oceanology (St. Petersburg)

Training: Computer training

Languages other than mother tongue: English, Russian

Present function(s): Researcher in physical oceanography, Marine Science and Resources Research Centre (4 years)

Previous position(s):

Experience in the field: Participated extensively in oceanographic cruises (not specified)

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LOS/PCN/TP/1992/CRP.11
7 August 1992
ENGLISH
ORIGINAL: RUSSIAN

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 10-21 August 1992

## INFORMATION ON THE TRAINING OF PERSONNEL

### Revised Training Programme submitted by the delegation of the Russian Federation

1. Under this Programme, the Russian Federation would be prepared to accept for a total duration of approximately 10 months, beginning in October 1993, three trainees, one in each of the following areas:

(1) Marine geology;

(2) Marine geophysics;

(3) Marine ecology.

A detailed description of the training programmes in each of the disciplines is contained in the annex to this information.

2. Each programme will be carried out in four stages.

Stage 1 (approximately 4 weeks): general orientation course for trainees regarding the theoretical and practical training programmes, in particular lectures, and the nature of the research that they will carry out on board the research vessel. In addition, the trainees will become familiar with the equipment and instruments on board the research vessel.

At this stage, a short course to improve the trainees' knowledge of the Russian language can be held.

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Stage 2 (approximately 16 weeks): theoretical and practical training in each discipline held by the Yuzhmorgeologiya Science-Production Association - one of the leading Russian organizations involved in the study and exploration of the seabed in accordance with the United Nations Convention on the Law of the Sea.

Stage 3 (approximately 8 weeks): practical training on board the research vessel Yuzhmorgeologiya. Collection and processing of geological, geophysical and ecological data.

Stage 4 (approximately 12 weeks): continuation of theoretical and practical training received during stages 2 and 3. This will include, in particular, the study and integration of the results of the research conducted on board the research vessel, and the preparation of reports on the results of the training, which will be sent to the Preparatory Commission together with a full description of the training.

3. General qualifications of applicants. Applicants should:

(i) Be nominated by both the Preparatory Commission and their Government;

(ii) Have a postgraduate degree, or a degree from an institute of higher learning, in geology, geophysics or ecology;

(iii) Have at least two years' practical experience;

(iv) Have a sufficient command of spoken and written English and/or Russian;

(v) Be not more than 40 years of age;

(vi) Be in good health, both physically and mentally, to undergo training.

4. Allowances and expenses. The following expenses will be borne by the Russian side:

(i) Air travel to and from Moscow (economy class on Aeroflot Airlines) from an international airport in the trainee's country or from an airport in a neighbouring country;

(ii) Free accommodation at the Yuzhmorgeologiya Training Centre;

(iii) Stipends;

(iv) Free medical care during the training period;

(v) Training course on board the research vessel;

(vi) Scientific books and technical journals.

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## Annex

## TRAINING PROGRAMME AND QUALIFICATIONS OF APPLICANTS IN EACH FIELD

### Profile 1

### Marine geology

It is expected that the trainee in marine geology will acquire the scientific knowledge and practical skills needed to carry out the following functions:

1. Analyse and integrate geological and geophysical data obtained at the site reserved for the Authority on the basis of geostatistical analysis methods with the use of IBM PC/AT personal computers;

2. Set up and manage a geological data bank;

3. Directly supervise or monitor marine research at the site reserved for the Authority;

4. Select an area for mining with an evaluation of reserves and develop the technical and economic basis for its commercial exploitation.

To that end, the trainee will be offered a course of theoretical and practical training in the following areas:

During stage 2:

- Basic principles and study methods of marine geology;

- Minerogenesis of the world's oceans, classification of ferro-manganese nodule (FMN) fields, cobalt-manganese crusts and polymetallic sulphides;

- Geological structure of the Clarion-Clipperton zone and its tectonic properties;

- FMN geochemistry;

- Geomorphology and microrelief of the Clarion-Clipperton zone and their importance in the commercial exploitation of nodules (as they relate to the Authority's site);

- Sediments and engineering and geological properties of the Clarion-Clipperton zone (as they relate to the Authority's site);

- Phased approach in the study and exploitation of nodules;

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- Principles of technical and economic computation in evaluating the commercial significance of nodules by means of techniques for the mathematical modelling of deposits;
- Setting up and management of marine geology data banks.

During stage 3 (training on board the research vessel):

- Planning of the research voyage;
- Selection of nodule and sediment samples;
- Observation, using a deep-sea continuous-survey camera, and description of nodules and sediments, photographic measurement of the density of a bed;
- Chemical analysis of nodules;
- Processing of information and statistical analysis of geological data;
- Techniques for calculating ore reserves.

During stage 4:

- Integration of the results of the research conducted on board the research vessel;
- Completion of training conducted during previous stages, drawing on the results of the research carried out on board the research vessel;
- Preparation of a report on the training (if necessary, with the assistance of training supervisors).

The amount of theoretical and practical work will be determined more precisely after the selection of the applicant, depending on the level of his theoretical knowledge and his previous experience.

Applicants for training in marine geology should:

- Have basic knowledge and at least two years' practical experience in the field of marine geology, sedimentology, mineralogy and geochemistry;
- Be familiar with exploration techniques on land;
- Possess knowledge of techniques for the development and exploitation of ore deposits on land;
- Be able to work on a personal computer.

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## Profile 2

## Marine geophysics

It is expected that the trainee will acquire the scientific knowledge and practical skills needed to carry out the following functions:

1. Supervision of mineral exploration work with the integrated use of geophysical techniques;

2. Evaluation, selection and use of optimum technological geophysical systems at different stages of exploration;

3. Computer processing and comprehensive quantitative and qualitative interpretation of geophysical data;

4. Computer plotting of resulting geophysical maps;

5. Expert evaluation of products.

To that end, the trainee will be offered a course of theoretical and practical training (using data obtained at the site reserved for the Authority) in the following areas:

During stage 2:

- Theoretical aspects of the methods of marine geophysics with reference to resolving problems of prospecting for ferro-manganese nodules;

- Structure and functional and theoretical design for the construction of a near-surface geophysical package, including a multibeam echosounder, long-range sonar, multi-frequency profiling and high-frequency seismo-acoustics;

- Structure and functional and theoretical design for the construction of a deep-water geophysical package, including a high-resolution echosounder, a side-scan sonar with phase channel and profiles;

- Structure and functional and theoretical design for the construction of a towed seabed geophysical package, including an echosounder, sonar, profiles, television camera and stereoscopic camera;

- Construction and equipment of autonomous manned and unmanned underwater craft;

- Integrated satellite navigation systems using systems such as Navstar and Transit, underwater acoustic navigation, log and gyrocompass - structural design and software.

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During stage 3 (training on board the research vessel):

- Planning of the research voyage;
- Acoustic nodule-prospecting techniques for such purposes as the construction of topographic maps, the determination of the structure of sub-bottom layers, evaluation of the density of nodule beds and compilation of sound-pressure maps;
- Computer processing and systematization of acoustic data;
- Navigation techniques;
- Measurement of the physical characteristics of water using a system for determining its depth, temperature and electroconductivity.

During stage 4:

- Integration of the results of the research conducted on board the research vessel;
- Completion of training conducted during previous stages, drawing on the results of the research carried out on board the research vessel;
- Preparation of a report on the training (if necessary, with the assistance of training supervisors).

The amount of theoretical and practical work will be determined more precisely after the selection of the applicant, depending on the level of his theoretical knowledge and his previous experience.

Applicants for training in this area should:

- Have basic knowledge and at least two years' practical experience in the field of marine geophysics, including seismological exploration, acoustics and optics;
- Be familiar with exploration techniques on land and with the technology for applying them;
- Have experience in the computer processing of geophysical (seismic) data.

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## Profile 3

## Marine ecology

It is expected that the trainee will acquire the scientific knowledge and practical skills needed to carry out the following functions:

1. Organize and supervise projects for the study of background characteristics in the Area;

2. Develop and conduct model and on-site marine experiments, including predictive assessment of the environmental impact of the industrial exploitation of ferro-manganese nodules;

3. Carry out, as part of an international group of experts, the environmental assessment of projects using various technologies for the industrial recovery of nodules;

4. Take part in environmental monitoring in the Area.

During stage 2:

- Strategic principles for organizing environmental monitoring in the Area, based on the arrangement of reserved and monitoring areas;
- Marine deposits and their role in long-term environmental monitoring;
- Methodology and technology for the study of natural biological activity at various horizons of the water body and in bottom sediments;
- Study of hydrological and optical-acoustic characteristics;
- Methods for mathematical modelling of the ecological impact of the industrial exploitation of resources;
- Planning methods for marine geo-ecological experiments.

During stage 3 (training on board the research vessel):

- Study (using the theoretical knowledge acquired during stage 2) of marine deposits, natural biological activity at various horizons of the water body and in bottom sediments, and other aspects of marine ecology.

During stage 4:

- Integration of the results of the research conducted on board the research vessel;

/...

- Completion of training conducted during previous stages, drawing on the results of the research carried out on board the research vessel;

- Preparation of a report on the training (if necessary, with the assistance of training supervisors).

The amount of theoretical and practical work in this area will be determined more precisely after the selection of the applicant, depending on the level of his theoretical knowledge and his previous experience.

Applicants for training in marine ecology should:

- Have basic knowledge and at least two years' practical experience in the field of marine biology, sedimentology and geochemistry;

- Be familiar with the methods of chemical analysis;

- Have experience in processing geochemical and biological data.

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LOS/PCN/TP/1993/CRP.12/Rev.1
26 March 1993
ENGLISH
ORIGINAL: RUSSIAN

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Eleventh session
Kingston, Jamaica
22 March-2 April 1993

# TRAINING PROGRAMME FOR THE PREPARATORY COMMISSION OF THE INTERNATIONAL SEABED AUTHORITY AS REQUIRED OF PIONEER INVESTORS

## Proposal submitted by Interoceanmetal Joint Organization and its certifying States*

1. The registered pioneer investor - Interoceanmetal Joint Organization ("Interokeanmetall") (IOM)) and its certifying States - the Republic of Bulgaria, the Republic of Cuba, the Republic of Poland, the Russian Federation and the Czech Republic and Slovakia, pursuant to paragraph 12 (a) (ii) of resolution II and to the understanding on the fulfilment of obligations (LOS/PCN/L.108, annex), of 14 August 1992, is prepared to receive a group of four trainees for a period of about 10 months beginning in September-November 1994.

2. The training programme will draw on the scientific and technological potential and experience of IOM and its certifying States in the following priority disciplines recommended in the report by the Group of Technical Experts (LOS/PCN/BUR/R.6):

- Geophysics (1 trainee);
- Marine ecology (1 trainee);
- Metallurgical engineering (2 trainees).

A description of the training programmes in each of the disciplines is provided in the annex to the present document.

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* Revised in accordance with the recommendation made at the meeting of the Training Panel on 25 March 1993.

/...

3. The training programme will be carried out in four stages.

3.1. The first stage (eight weeks) will be held in Poland and will consist of a single orientation programme for all three disciplines comprising all aspects of the exploration and development of the mineral resources of the world's oceans. At this stage, the most effective way of presenting the basic principles of the technology of geological prospecting at the specific site, as well as current knowledge and the experience gained by IOM in respect of the technology of processing ocean mineral resources, is considered to be the following:

- General orientation and theoretical lectures by leading specialists of the organization and experts from the certifying States at the headquarters of IOM, Szczecin (Poland);
- Study by the trainees of IOM's collection of literature and materials on geological prospecting at the site reserved for the Authority, problems of mining and transport technology and the results of IOM's research on the technology of processing polymetallic nodules.

3.2. At the second stage (12-15 weeks) the training will continue at leading enterprises and research and design institutes of the certifying States, where the trainees will improve their theoretical knowledge and acquire some practical skills in the specified areas of the above-mentioned disciplines.

3.2.1. As regards geophysics the training programme will be carried out in Bulgaria, at the "Geologiya i Geofizika" enterprises and also at the Institutes of Geology and Oceanology of the Academy of Sciences.

3.2.2. As regards marine ecology the training programme will be carried out consecutively in Poland, at the Institute of Oceanology of the Academy of Sciences (seven weeks) and in the Russian Federation at the "Yuzhmorgeologiya" (seven weeks).

3.2.3. As to metallurgical engineering, the programme for the two trainees will be carried out at the scientific and industrial institutions experienced in metallurgical processing of conventional ores and in developing methods and techniques for processing polymetallic nodules. One trainee will be trained by Cuba at the Research Centre of the Mining and Metallurgical Industry (CIPIMM) and at metallurgical enterprises and their research centres, while the second trainee jointly by the Czech Republic and Slovakia at the Sered, Istebne and Krompahi metallurgical enterprises, at the Institute of Mineral Raw Materials and at the Metallurgical Plant Design Institute.

3.3. At the third stage (eight to nine weeks) the trainees in geophysics and marine ecology will undertake practical training by taking part in a geological/ecological voyage, on board one of the research vessels of the "Yuzhmorgeologiya" enterprise in IOM pioneer area; the programme in metallurgical engineering provides for practical training at the metallurgical enterprises and research centres referred to in paragraph 3.2.2.

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3.4. The fourth and final stage (eight weeks) will take place at IOM's headquarters (Szczecin) and will consist in the preparation by the trainees of a detailed report on the training course, the new concepts of work and research methods studied, the development of a specific project demonstrating the effectiveness of the training programme and, finally, the award of certificates to the trainees.

4. General qualifications required for the trainees:

- University graduates equivalent M.Sc. in geophysics, marine ecology, oceanology or marine biology and qualified engineers in metallurgical engineering;
- At least two years' practical experience in the candidate's specialized field;
- Ability to work on a personal computer;
- A knowledge of English for metallurgical engineering courses in Cuba: English or Spanish. The knowledge of written and spoken Russian is also desirable, since Russian is the working language of IOM;
- Upper age limit: 40 years;
- Good health, physically and mentally, and fitness to work on board research vessels, in chemical laboratories and at metallurgical enterprises, supported by appropriate medical certificates.

5. The expenses related to the training programme will be borne or reimbursed by IOM and its certifying States.

The following will be provided:

- Economy-class air fares or, where appropriate, train fares and other travel costs related to the training;
- Free accommodation at the training centres of the relevant research institutes and production enterprises;
- Per diem allowances according to the standards of the receiving country, not exceeding US$ 30 per day;
- Free medical care and access to the scientific and technical literature and relevant periodicals published in the country where the training takes place.

6. The trainees should be nominated by their Governments and confirmed by the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea.

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## Annex

## THE TRAINING PROGRAMMES IN THE SPECIFIC DISCIPLINES

Since no information is available on the extent of the trainees' theoretical and practical knowledge in the specific areas of instruction, the training programmes are indicative in nature. They will be developed in more detail on the basis of the level of theoretical knowledge and practical experience of the candidates who are sent.

At the first stage of the course, as indicated in paragraph 3.1 of the training programme, the training will consist of a single eight-week programme for all three disciplines comprising:

1. Lecture series on:

- Mineral resources of the world's oceans and current problems of their exploration and development, including international legal aspects;
- Basic principles of the methodology of geological prospecting in deep-water areas of the world's oceans, stages of their application and modern technical equipment;
- Technological and environmental problems of the deep-sea mining of polymetallic nodules;
- Basic principles of the technology of processing polymetallic nodules, non-traditional methods of utilizing them and predictions of demand for metals;

2. Independent work by the trainees, using IOM's collection of materials, on the methodology and results of geological prospecting at the site reserved for the Authority, familiarization with the methods of submitting a request to the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea and also with work on the technologies of the mining, transportation and processing of nodules. The trainees will be offered advisory assistance by IOM specialists.

### I. GEOPHYSICS

At the second stage, the trainee will acquire the necessary theoretical knowledge and practical skills in the following areas:

- Marine geophysics: theoretical principles, types and methods of research, and modern technical equipment for carrying out geological prospecting for polymetallic nodules;

/...

- Satellite and underwater navigation systems, technology of their application to the work of geophysical complexes, and software;

- Near-surface, deep-water and towed seabed geophysical complexes: structure, basic designs, conditions of use, methods of work and geological problems to be solved;

- Computer processing of geophysical information, quantitative and qualitative interpretation of data, and subsequent plotting of maps;

- Integration of geophysical methods of research with geological, hydrological and ecological methods at different stages of geological prospecting;

- Comprehensive geological analysis of the results obtained and planning of further areas of geological and geophysical work within the context of the geological prospecting process.

At the third stage, preparation for and participation in a scientific research voyage is planned. The trainee will learn about:

- Planning and organizing geological prospecting voyages;

- Practical work skills in the operation of geophysical complexes and computer processing of results;

- Operational analysis of the results of seismo-acoustic profiling, side-scan hydrolocators, telephotographic profiling, physical characteristics of bottom sediments and the water body, along with the compilation of bathymetric and other maps showing the structure of the sedimentary cover, the presence of rocky deposits on the bottom surface and the fields of sedimentary development, the movement of which may hinder the operation of collection apparatus, etc.;

- Preparation of a report on the results of the prospecting, accompanied by appropriate diagrams.

At the fourth stage, in accordance with paragraph 3.4 of the training programme, the trainee will prepare a detailed report on all the stages of the training course and the types and methods of marine geophysical research studied, and will prepare a draft programme of geophysical activities at the search and assessment stage within the site reserved for the Authority.

As a result, the trainee-geophysicist will acquire the necessary knowledge and skills to carry out independent geological prospecting at the site of the nodules and will gain the ability to plan, conduct, direct and monitor such work.

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## II. MARINE ECOLOGY

At the second stage, the trainee will acquire the necessary theoretical knowledge and practical skills in the following areas:

- Main biocoenoses in the areas of proposed mining of polymetallic nodules (phyto- and zooplankton, benthos, microbial coenoses), their distribution and mutability in the water body and bottom sediments, possible global environmental consequences of damage to them in the mining process;
- Basic principles of marine geochemistry: main natural and possible technogenic toxins in the areas of proposed mining;
- Features of water-body dynamics in the equatorial zone of the Pacific Ocean: hydrophysical and hydrochemical indicators, methods of studying them and on-board technical equipment;
- Modern sedimentogenesis and its monitoring role in assessing the scale and degree technogenic pollution of the environment; methods of study and technical resources;
- Methods of exploratory environmental research and the combination of those methods with the geological and geophysical methods used in the geological prospecting process at the stage of studying background environmental characteristics as the main foundation for monitoring;
- Principles of environmental monitoring - selection of reference conservation areas and reference areas of influence, technology of long-term environmental observations and experiments;
- Experimental natural and laboratory toxicological and biochemical testing;
- Computer simulation modelling of the passage of a substance (suspensions etc.) through the water body and changes in that substance;
- Predictions of possible adverse environmental consequences of the application of different technological plans for mining, and participation of ecologists in the formulation of measures to avert such consequences at the stage of designing technical equipment.

At the third stage, preparation for and participation in a scientific research voyage is planned, to provide training in:

- Planning ecological activities on a comprehensive scientific research voyage;

- Methods and techniques of taking samples of phyto- and zooplankton, benthos and other microbial coenoses; locating them, harvesting them and studying them on board;

- Methods and techniques of studying hydrophysical properties and hydrochemical indicators of the water body, with a comprehensive interpretation of the results obtained;

- Creating and managing an environmental information bank;

- Analysis of the results of exploratory environmental research with computer processing and the preparation, on board the vessel, of an illustrated chart, with the assistance of training supervisors.

At the fourth stage, in accordance with paragraph 3.4 of the training programme, the trainee will prepare a detailed report on all the stages of the training course, the types and methods of ecological research studied, and a fuller analysis of the materials of the exploratory research, and will also prepare a draft programme of ecological activities along with geological and geophysical research within the site reserved for the Authority with a view to determining background ecological characteristics.

After completing the training in this area of specialization, the trainee will acquire the necessary theoretical knowledge and practical skills to perform the following functions:

- Planning, conducting and supervising the implementation of projects to study background geo-ecological characteristics and carry out environmental monitoring in the area;

- Organizing and conducting model experiments with an evaluation of the possible environmental consequences of the industrial mining of polymetallic nodules;

- Participating in the preparation of ecological expert reports concerning alternative technologies for the industrial mining of polymetallic nodules;

- Creating and managing an ecological database.

## III. METALLURGICAL ENGINEERING

At the second stage, the trainee will acquire the necessary theoretical knowledge and practical skills in the following areas:

- Principles of mineralogy, geochemistry and physical properties of polymetallic nodules and their surrounding elements (bottom sediments, near-bottom parts of the water body);

- Laboratory analysis methods of quantitative study of main and secondary metals, impurities and admixtures;

- Pyro-hydrometallurgical and hydrometallurgical processes (restoration, lixiviation, extraction, electrolysis) of the processing of nodules, and basic areas of further research;

- Basic methods of primary enrichment, systems of hydrotransportation and preparation of nodules for metallurgical processing;

- Consolidated technical and economic calculations and comparison of technological methods of processing nodules in commercial production on the basis of the degree of mining, material consumption, power consumption, environmental purity, etc.;

- Non-traditional methods of developing nodules as sorbents, fertilizers, catalysers, etc.

At the third stage, study of the work carried out on polymetallic nodules in the following areas:

- Methods of primary enrichment of nodules;

- Methods of electric smelting of nodules with subsequent hydrometallurgical processing of alloys of non-ferrous metals;

- Methods of acid or ammoniacal carbonate lixiviation.

The trainee will become acquainted with the basic principles of designing new factories for processing analogous ores or adapting existing factories; the requirements for drawing up the basic design documents, their contents and the processing of technical and economic indicators, taking into account the specific features of technology, environmental purity and economics; the preparation of market analyses and predictions of demand for manganese, copper, nickel and cobalt; and the technology of the industrial processing of manganese or nickel-cobalt ores at selected factories.

At the fourth stage, in accordance with paragraph 3.4 of the training programme, the trainee will prepare a detailed report on all the stages of the training course, the types and methods of metallurgical processing of nodules studied, including non-traditional methods which have a positive impact on the economics of minerals development.

As an overall result, the trainee will acquire the necessary knowledge and independent work skills in the area of:

- Planning, conducting and monitoring research work in the main areas of the processing and non-traditional use of nodules;

/...

- Preparing laboratory equipment to conduct research on the processing of nodules;
- Preparing the main design documents and drawing up technical and economic indicators of the industrial processing of nodules;
- Preparing market analyses and predictions of demand for manganese, copper, nickel, cobalt and their by-products.

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LOS/PCN/TP/1993/CRP.13/Rev.1
26 March 1993
ENGLISH
ORIGINAL: CHINESE

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Eleventh session
Kingston, Jamaica
22 March-2 April 1993

# TRAINING PROGRAMME FOR THE PREPARATORY COMMISSION OF THE INTERNATIONAL SEABED AUTHORITY AS REQUIRED OF PIONEER INVESTORS

## Proposal submitted by the delegation of China

1. Pursuant to the understanding on the fulfilment of obligations by the registered pioneer investor, the China Ocean Mineral Resources Research and Development Association (COMRA) and its certifying State, the People's Republic of China, China is prepared to receive four trainees for a training period of approximately 11 months beginning in March 1994.

2. The four trainees will be trained in the following disciplines:

(i) Marine geology (one person);

(ii) Marine geophysics (one person);

(iii) Metallurgical engineering (two persons).

A detailed description of the training programme in each of the disciplines is contained in the annex to this proposal.

3. The training programme will be divided into four stages:

Stage 1 (about 10 weeks):

General orientation courses for trainees regarding the theoretical knowledge of oceanography, etc. and familiarizing themselves with relevant instruments and equipment. A Chinese language course will be carried out for trainees to adapt themselves to living and studying in China.

/...

At this stage, a one-week cruise will be carried out in nearshore for trainees to be familiarized with the equipment and instruments on board the research vessel.

Stage 2 (about 16 weeks):

Theoretical and practical training in each discipline held in related training centres designated by COMRA, which, as a registered pioneer investor, is responsible for the coordination and organization of the deep seabed mining activities in China.

Stage 3 (about 6 weeks):

Practical training on board the research vessel(s) in the pioneer area of COMRA. The trainees will get on board at Honolulu, Hawaii, and return to the same port upon completion of the training.

Stage 4 (about 12 weeks):

Continuation of theoretical and practical training as received during stages 2 and 3. This will include participation in and research on subjects chosen by the trainees in training centre based on the results of the previous stages in the programme.

During the period of training, the trainees will be required to report regularly to a follow-up panel of China that will monitor the result of their training. They will be also required to make a final report on their training at the end of the period, which will be submitted to the Training Panel of the Preparatory Commission together with a full evaluation of the follow-up Panel of China on the quality of each trainee's work.

4. Qualifications of applicants

Applicants should:

(i) Be nominated by both the Preparatory Commission and their Governments;

(ii) Have a Master's Degree or equivalent in marine geology and marine geophysics and have completed at least 4 years of study in metallurgical engineering or chemical engineering related to metallurgy at a University or Institute;

(iii) Have occupational experience of more than two years;

(iv) Have sufficient command of spoken and written Chinese and/or English;

(v) Be not more than 40 years of age;

(vi) Be in good health both physically and mentally to undergo training.

/...

5. Allowances and expenses. The following expenses will be borne by the Chinese side:

(i) Return air tickets (economy class) between a main international airport in the trainee's country and Beijing, China and also between Hawaii and China.

(ii) Accommodations, and the expenses for study tours;

(iii) Stipends;

(iv) Medical care during the training period.

## Annex

## TRAINING PROGRAMME AND QUALIFICATIONS OF APPLICANTS IN EACH FIELD

### Profile 1

### Marine geology

The trainee on marine geology is expected to acquire the necessary knowledge and special skills to carry out the following functions:

(1) Supervising and conducting of geological exploration activities for polymetallic nodules;

(2) Management and application of geological database;

(3) Data analysis, processing and synthesis;

(4) Evaluation of ore reserves and selection of areas suitable for mining.

To that end, the trainee will be offered both theoretical and practical training in the following subjects:

Stage 2:

- Basic theory and methodology in marine geology and marine mineral resources;
- Methods and equipment for both exploration and analysis of polymetallic nodules;
- Introduction to minerogenesis for marine mineral resources;
- Sedimentology;
- Petrography, mineralogy and geochemistry of polymetallic nodules;
- Data processing, database management and computer-mapping;
- Calculation of reserves for polymetallic nodules, determination and synthetic evaluation of areas for mining.

Stage 3:

- Planning for exploration cruises;
- Exposure to various sampling equipment and other relevant equipment;
- Methods of sampling, sample preparation and storage;
- On-the-spot test, analysis and identification of samples;

- Seabed photographs, on-board description and documentation of nodules and sediments, and interpretation of seabed photographs;
- Data collection with multi-frequency system and bathymeter;
- Preliminary processing and analysis of various geological data collected, and input into the database;
- Computer-plotting of water depth, abundance, grade and coverage of nodules;
- Estimation for ore reserves;
- Procedures and requirements for on-the-spot compilation of report.

Stage 4:

Based on the training of the previous stages, the trainee will be required to select a topic for research and to prepare a detailed report in the training centre.

Therefore, candidates should possess the following knowledge:

(1) A sound knowledge in marine geology, mineralogy and statistics;

(2) A general knowledge in marine geophysics, geochemistry as well as in computer operation; and

(3) A basic knowledge in seabed exploration methods, evaluation of mineral deposits and exploitation techniques.

## Profile 2

## Marine geophysics

The trainee on marine geophysics is expected to acquire the necessary knowledge and special skills to carry out the following functions:

(1) Supervising and conducting of geophysical exploration;

(2) Evaluation, selection and utilization of most effective geophysical system at different stages of exploration;

(3) Quantitative and qualitative interpretation and integrated analysis of various geophysical data based on data processing;

(4) Evaluation of geophysical exploration programme.

To that end, the trainee will be offered both theoretical and practical training in the following subjects:

Stage 2:

- Theoretical basics, instrumentation and data acquisition techniques in marine geophysical methods (including bathymetry, gravity, magnetism, seismic reflection and multi-frequency system);
- Positioning system (including GPS), processing and plotting of navigational data;
- Introduction to plate tectonics;
- An outline of sedimentology and seabed polymetallic nodules for interpretation of geophysical data;
- Modelling of gravity and magnetism;
- Interpretation of seismic reflection profiles;
- The measurement of pressure ratio, coverage and abundance of polymetallic nodules with acoustic methods;
- Establishment of geophysical database of polymetallic nodule exploration and compilation of various geophysical profiles and counter maps using computers;
- Geophysical data processing and its integrated geological interpretation.

Stage 3:

- Planning of exploration cruises;
- Exposure to various geophysical equipment of polymetallic nodule exploration;
- Data acquisition of bathymetric, gravity, magnetic, seismic, multi-frequency and positioning system;
- Mapping seabed topography and sub-bottom structures, measuring and translating sound-pressure ratio to determine coverage and abundance of polymetallic nodules;
- Preliminary processing of geophysical data, establishment of database and computer plotting;
- Measurement of physical properties of water.

Stage 4:

Based on the training of the previous stages, the trainee will be required to select a topic for research and to prepare a detailed report in the training centre.

/...

Therefore, candidates should possess the following knowledge:

(1) A sound knowledge in seismics, gravity, magnetism, acoustics, optics, signal and data processing;

(2) A general knowledge in methodology of exploration and electronic engineering; and

(3) A basic knowledge in mineralogy, marine geology and establishment of database.

## Profile 3

## Metallurgical engineering

Upon completion of the training on metallurgical engineering, trainees are expected to acquire the scientific knowledge and special skills to carry out the following functions:

(1) Evaluation and comparison on various metallurgical processes for processing marine polymetallic nodules;

(2) Analysing and processing the data on metallurgical processes, as well as calculating the balances of energy and masses in the processes;

(3) Analysis of valuable elements in polymetallic nodules and in extractive process materials;

(4) The occurrence and distribution of the elements in polymetallic nodules as well as their mineralogical characteristics.

To that end, the trainees will be offered both theoretical and practical training in the following subjects:

Stage 2:

- Metallurgical principles of polymetallic nodules;
- The techniques for extraction of copper, nickel, cobalt, manganese and iron from polymetallic nodules;
- Techniques for separating metals by leaching;
- The comparative studies on the various processes for processing polymetallic nodules;
- Mineral spectroscopes of polymetallic nodules and their applications in extractive metallurgy;
- The modern methods for analysing minerals in polymetallic nodules;
- The calculation of the mass and energy balances in polymetallic nodule metallurgy; and
- Protection of environment in the extractive metallurgy.

Stage 3:

- Familiarizing with the marine environment;
- Acquainting with a variety of sampling equipment and the relevant measuring and prospecting techniques;
- Acquainting with the methods for sampling, sample preparation and storage; and
- Acquainting with the methods for on-board chemical analysis and physical tests of polymetallic nodule samples.

Stage 4:

Based on the training of the previous stages, the trainee will be required to select a topic for research and to prepare a detailed report in the training centre.

Therefore, candidates should possess the following knowledge:

(1) A sound knowledge in inorganic chemistry, physical chemistry, chemical engineering and metallurgy;

(2) A general knowledge in analytical methods of materials as well as electronic techniques; and

(3) A general knowledge in mineralogy.

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LOS/PCN/TP/1993/CRP.13/Rev.1/Corr.1
2 September 1993

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA

# TRAINING PROGRAMME FOR THE PREPARATORY COMMISSION OF THE INTERNATIONAL SEABED AUTHORITY AS REQUIRED OF PIONEER INVESTORS

## Proposal submitted by the delegation of China

## Corrigendum

Page 1, paragraph 1, line 5

Delete beginning in March 1994

Add the following sentence at the end of the paragraph:

> The Training Panel will be informed at its next meeting, which is expected to be held in early 1994, of the specific time for the implementation of the Chinese training programme.

LOS/PCN/TP/1993/CRP.14
9 March 1993

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Eleventh session
Kingston, Jamaica
22 March-2 April 1993

# SYNOPSIS OF THE APPLICATIONS SUBMITTED FOR THE TRAINEESHIPS UNDER THE TRAINING PROGRAMMES OFFERED BY INDIA AND THE RUSSIAN FEDERATION

Note by the Secretariat

## INTRODUCTION

1. The present document was prepared by the Secretariat for the convenience of the members of the Training Panel. It contains a synopsis of the information submitted by each applicant for a traineeship under the Indian and/or Russian training programmes and is intended to give the members of the Panel a quick overview of the applicants' qualifications. The complete file of each applicant will be available for the meeting, but only in the original language of submission. In view of the volume of documentation, it was impossible to have all the relevant information concerning a candidate translated, e.g., the explanatory notes from the nominee and the nominating Government.

2. The applications have been organized according to the disciplines offered in the traineeships, i.e., geology, geophysics, chemical engineering and marine ecology. Thus, applications which have been submitted for a traineeship under the Indian programme in one discipline are followed by those submitted under the Russian programme in the same discipline, where applicable. Those applicants who have not specified a preferred programme but who are qualified in one of the disciplines offered in the traineeships have been included at the end of the relevant discipline. Where the applicant has applied for more than one traineeship, the application has been included under each of the relevant programmes and disciplines. Those applicants who have indicated neither a preferred programme nor a traineeship have been placed at the end of the document.

/...

## INDIAN PROGRAMME - MINING GEOLOGY

### List of applicants by country and geographical region

### AFRICA

| Name | Country | Page |
|---|---|---|
| John Agyei DUODO | Ghana | 135 |
| Mohamed Elamin Abdelhamid KHALID | Sudan | 137 |
| Yohanna Wilson SHAGHUDE | United Republic of Tanzania | 139 |

### ASIA

| Name | Country | Page |
|---|---|---|
| Mohammed Qasim Hasan AL-JUMAILY | Iraq | 135 |
| Majid Muhi SHUKUR | Iraq | 139 |
| Khalid Abdullah KADI | Saudi Arabia | 136 |
| Samir A. MUTWALLI | Saudi Arabia | 138 |
| Abdul Reza KARBASSI | Iran (Islamic Republic of) | 136 |
| Mohammad Karamati MOEZABADI | Iran (Islamic Republic of) | 138 |
| Wan-Soo KIM | Republic of Korea | 137 |
| Than TUN | Myanmar | 139 |

## RUSSIAN PROGRAMME - MARINE GEOLOGY

### List of applicants by country and geographical region

### AFRICA

| Name | Country | Page |
|---|---|---|
| Kiana Perminus GITHUI | Kenya | 141 |
| Abdenour HAMRANI | Algeria | 141 |

### ASIA

| Name | Country | Page |
|---|---|---|
| Badir ALBADRAN | Iraq | 140 |

### LATIN AMERICA AND THE CARIBBEAN

| Name | Country | Page |
|---|---|---|
| Miguel Cabrera CASTELLANOS | Cuba | 140 |

/...

## INDIAN PROGRAMME - EXPLORATION GEOPHYSICS

### List of applicants by country and geographical region

### AFRICA

| Name | Country | Page |
|---|---|---|
| Kwame Odame BOAMAH | Ghana | 142 |
| Mourad KELKAL | Algeria | 142 |
| Abraham MACLEAN | Ghana | 143 |
| Oi N'Guessan Pierre N'GUESSAN | Côte d'Ivoire | 143 |

### ASIA

| Name | Country | Page |
|---|---|---|
| Nyunt SHWE | Myanmar | 144 |
| Than TUN | Myanmar | 144 |

## RUSSIAN PROGRAMME - MARINE GEOPHYSICS

### List of applicants by country and geographical region

### AFRICA

| Name | Country | Page |
|---|---|---|
| Ibrahim BALLA | Sudan | 145 |
| Thomas M. MUNYAO | Kenya | 145 |

### ASIA

| Name | Country | Page |
|---|---|---|
| Thawatchai TEPSUWAN | Thailand | 146 |

## NO PREFERRED PROGRAMME - QUALIFIED IN GEOPHYSICS

### List of applicants by country and geographical region

### AFRICA

| Name | Country | Page |
|---|---|---|
| Ahmed ABDELLAOUI | Algeria | 146 |

/...

## INDIAN PROGRAMME - CHEMICAL ENGINEERING

### List of applicants by country and geographical region

#### ASIA

| Name | Country | Page |
|---|---|---|
| Tamim Niazi FRANGOUL | Iraq | 147 |
| Ali Asgher HAMIDI | Iran (Islamic Republic of) | 147 |
| Aye Aye KYAW | Myanmar | 148 |

## RUSSIAN PROGRAMME - MARINE ECOLOGY

### List of applicants by country and geographical region

#### AFRICA

| Name | Country | |
|---|---|---|
| Julius Philip OKONDO | Kenya | 149 |

#### ASIA

| Name | Country | |
|---|---|---|
| Fikrat Majied HASSAN | Iraq | 148 |
| Samir A. MUTWALLI | Saudi Arabia | 138 |

## NO PREFERRED PROGRAMME OR TRAINEESHIP

### List of applicants by country and geographical region

#### ASIA

| Name | Country | |
|---|---|---|
| Alawi Mohamed AL-MOHDAR | Yemen | 149 |
| Gamal Abdulla NASSER | Yemen | 149 |

/...

## INDIA - MINING GEOLOGY

Name: AL-JUMAILY, Mchammed Qasim Hasan (Iraq) - Age 32

Education: M.Sc., Geology - Engineering Geology (1986, Iraq), B.Sc., Geology (1983, Iraq)

Training, research and publications: Research in engineering geology, structural geology, statistics and computer science. Published 6 research papers.

Languages other than mother tongue: English

Present function(s): (1988- ) Assistant Lecturer, Department of Geology, Mosul University

Previous position(s):

Experience in the field: Not specified.

Training programme of interest: Government has nominated applicant for a traineeship in mining geology under the training programme offered by India.

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Name: DUODO, John Agyei (Ghana) - Age 37

Education: M.Sc., Geology (Mining Engineer Geologist) - geology and prospecting for mineral deposits (1985, Russian Federation); First University Examinations (1980, Azerbaijan)

Training, research and publications: Training course on remote sensing applications to geological sciences (3 weeks, Germany). Participated in the African Geological Conference. Master's thesis; co-author of one report. Partially translated and edited 12 Russian geological reports.

Languages other than mother tongue: English, Russian

Present function(s): (1985- ) Geologist, Ghana Geological Survey Department

Previous position(s):

Experience in the field: Feasibility studies for Kibi Bauxite Project; exploration of limestone deposits; prospecting for radioactive materials; prospecting for cement raw materials as Project Geologist.

Training programme of interest: Government has nominated applicant for a traineeship in mining geology under the training programme offered by India.

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Name: KADI, Khalid Abdullah (Saudi Arabia) - Age 38

Education: M.Sc., Applied Geology - Sedimentary (1989, Saudi Arabia); B.Sc., Geology/Biology (1981, Saudi Arabia)

Training, research and publications: Geological investigation and application (2 months, Australia); remote sensing in geological sciences (1 month, USA); offshore prospecting (6 months, Japan). Seminar on economic guidelines for exploration planning (1 week). Computer course - PC (1 week). Participated in symposium on earth sciences. Contributed to the report "The Kingdom of Saudi Arabia and the Law of the Sea", which includes marine geological data. Former member of the Saudi delegation to the Preparatory Commission.

Languages other than mother tongue: English (11 months, USA), French (2 months), Japanese (3 months, Japan)

Present function(s): (1989- ) Geologist, Marine Geology Section, Directorate General of Mineral Resources (DGMR), Ministry of Petroleum and Mineral Resources

Previous position(s): (1981-1989) Geologist, Economic Geology Section, Directorate General of Mineral Resources

Experience in the field: Collection, mapping, geochemical studies and preparation of geological report on granitic samples from the Arabian Shield; exploration of black sands on Red Sea coast.

Training programme of interest: India - mining geology

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Name: KARBASSI, Abdul Reza (Iran (Islamic Republic of)) - Age 33

Education: Ph.D., Marine Geology (1990, India); M.Sc., Marine Geology (1984, India); B.Sc., Geology (1982, India)

Training, research and publications: Co-author of three articles, which were published in 1991. Author or co-author of papers presented at various seminars: two in 1992, one in 1991, two in 1988 and three in 1987, dealing, *inter alia*, with sedimentology, suspended particulate matter and marine pollution analysis. Some of those seminars were given at international symposia.

Languages other than mother tongue: English

Present function(s): Not specified. Applicant qualified for the Ph.D. in January 1990 and since then has written a number of articles and papers (see above).

Previous position(s):

Experience in the field: Not specified.

/...

Training programme of interest: Government has nominated applicant for a traineeship in mining geology under the training programme offered by India.

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Name: KHALID, Mohamed Elamin Abdelhamid (Sudan) - Age 38

Education: M.Sc., Geology (1990, Canada); B.Sc., Geology (1978, Sudan)

Training, research and publications: Field training in geological mapping (USA) and in sedimentology (Canada). Attended three geological conferences.

Languages other than mother tongue: English

Present function(s): Geologist, Ministry of Energy and Mining, Geological Research Authority of the Sudan (GRAS)

Previous position(s): (June-August 1990) Technician, Department of Geological Sciences, University of Saskatchewan, Canada
(1978-1986) Assistant Geologist, Sudanese Geological and Mineral Resources Department

Experience in the field: Exploration and evaluation of various deposits: iron, marble, uranium and gold. Sedimentological fieldwork.

Training programme of interest: Mining geology

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Name: KIM, Wan-Soo (Republic of Korea) - Age 32

Education: M.Sc., Engineering - mining and mineral engineering (1985, Republic of Korea); B.Sc., Engineering - mining and mineral engineering (1983, Republic of Korea)

Training, research and publications:

Languages other than mother tongue: English

Present function(s): (November 1991- ) Mining Engineer, Mining Policy Division, Ministry of Energy and Resources (MER)

Previous position(s): (July 1987-November 1991) Mining Engineer, Mining Safety Office, MER

Experience in the field: Not specified.

Training programme of interest: India - mining geology

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Name: MOEZABADI, Mohammad Karamati (Iran (Islamic Republic of)) - Age 36

Education: Ph.D., Petroleum Geology (1992, India); Master of Technology, Applied Geology (1986, India); B.Sc., Geology (1982, India)

Training, research and publications: Three articles; applicant has submitted copies of two articles, as well as an extract from his Ph.D. thesis.

Languages other than mother tongue: English

Present function(s): Head of Geology Section, Geochemistry Division, RIPI - National Iranian Oil Company

Previous position(s): Associated with the Institute of Petroleum Exploration, India

Experience in the field: Petroleum exploration: seismic method and source rock evaluation.

Training programme of interest: Government has nominated applicant for a traineeship under the training programme offered by India.

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Name: MUTWALLI, Samir A. (Saudi Arabia) - Age 28

Education: B.Sc., Chemical Marine Sciences (1991, Saudi Arabia)

Training, research and publications: Training workshop in observation and analysis of currents at sea (1 week); training course in marine geology research and application techniques (2 weeks). Computer course - PC (3 weeks). Short course in statistics. Participated in two symposia. Contributed to the report "The Kingdom of Saudi Arabia and the Law of the Sea", which includes marine geological data. Former member of the Saudi delegation to the Preparatory Commission.

Languages other than mother tongue: Studied English at university.

Present function(s): (1987- ) Marine Geologist, Directorate General of Mineral Resources, Ministry of Petroleum and Mineral Resources

Previous position(s):

Experience in the field: Geochemistry - absorption kinetics of heavy minerals by delta manganite; hydrography - water exchange between the Red Sea and the Indian Ocean through the Bab el Mandeb. Assisted in laboratory work on pollution and environmental impact on marine life.

Training programme of interest: India - mining geology; Russian Federation - marine ecology

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Name: SHAGHUDE, Yohanna Wilson (United Republic of Tanzania) - Age 35

Education: Diploma in Marine Affairs (1992, Canada); M.Sc., Oceanography (1990, U.K.); B.Sc., Geology (1986, United Republic of Tanzania)

Training, research and publications: Bathymetric charting course (1 month); workshop on marine sciences (1 week); IOI training course (2 months). Twelve term papers and other manuscripts. Current research on hydrodynamics, substrata erosion and benthic floral cover along Zanzibar coast.

Languages other than mother tongue: English

Present function(s): (1988- ) Assistant Research Fellow, Institute of Marine Sciences, University of Dar-es-Salaam

Previous position(s): (1986-1988) Tutorial Assistant, Institute of Marine Sciences
(1980-1983) Teacher Grade IID, Bishop Diocese of Mbulu

Experience in the field: Not specified.

Training programme of interest: India

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Name: SHUKUR, Majid Muhi (Iraq) - Age 35

Education: M.Sc., Geology (1991, Iraq); B.Sc., Geology (1979, Egypt)

Training, research and publications: Research on the mineralogy of apatite by infrared spectroscopy.

Languages other than mother tongue: Studied English at university.

Present function(s): (September 1991- ) Assistant Instructor, College of Engineering, Babylon University

Previous position(s): (2 years) Geophysicist, Ministry of Oil

Experience in the field: Not specified.

Training programme of interest: India. Government has nominated applicant for a traineeship in mining geology.

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Name: TUN, Than (Myanmar) - Age 38

Education: B.Sc., Geology (1978, Myanmar)

Training, research and publications: Departmental internal publications on gold and ruby exploration.

Languages other than mother tongue: English (good)

/...

Present function(s): (1992- ) Geologist, Geological Survey and Mineral Exploration

Previous position(s): (1985-1991) Geologist Grade 4, Geological Survey and Mineral Exploration (1979-1984) Geologist Grade 5

Experience in the field: Geological mapping and precious stones exploration.

Training programme of interest: India - mining geology

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## RUSSIAN FEDERATION - MARINE GEOLOGY

Name: ALBADRAN, Badir (Iraq) - Age 36

Education: Doctorat de 3ème cycle, Marine Geology (1986, France); D.E.A., Geology (1983, France); B.Sc., Geology (1977, Iraq)

Training, research and publications: The applicant attended a number of conferences. He is the author of eight scientific publications on, *inter alia*, sedimentation of the Gulf.

Languages other than mother tongue: English, French

Present function(s): Lecturer, Marine Science Centre, University of Basra

Previous position(s):

Experience in the field: Not specified.

Training programme of interest: Government has nominated applicant for a traineeship in marine geology under the training programme offered by the Russian Federation.

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Name: CASTELLANOS, Miguel Cabrera (Cuba) - Age 41

Education: M.Sc., Marine Geology (Geological Engineer) (1982, Russian Federation)

Training, research and publications: Postgraduate courses in geology and photogeology (Cuba) and sedimentation (Hungary). Author or co-author of 10 articles on, *inter alia*, the geological map of Cuba; characteristics of mineralogical distribution in the shelf; geological level of quaternary deposits on the continental shelf; identification of placer. Author or co-author of 5 marine geological reports and projects, e.g., general and specific studies of the continental shelf of Cuba. Participated in a number of national and international geological and scientific conferences.

Languages other than mother tongue: Russian

/...

Present function(s): Geological engineer, Institute of Geology, Ministry of Basic Industry

Previous position(s):

Experience in the field: Directed for the last five years geological investigations of the continental shelf - prospecting heavy minerals and construction materials.

Training programme of interest: Government has nominated applicant for a traineeship in marine geology under the training programme offered by the Russian Federation.

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Name: GITHUI, Kiana Perminus (Kenya) - Age 28

Education: B.Sc., Geology (1989, Kenya)

Training, research and publications: Training course in marine science (1 week); and in near-shore non-fuel mineral exploration (2 weeks)

Languages other than mother tongue: English

Present function(s): (3 years) Assistant Research Officer, Kenyan Marine and Fisheries Research Institute

Previous position(s):

Experience in the field: Spent 3 weeks on board a research vessel sampling core sediments/suspended sediments.

Training programme of interest: Government has nominated applicant for a traineeship in marine geology.

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Name: HAMRANI, Abdenour (Algeria) - Age 26

Education: Diplôme d'Etat de Technicien Supérieur, Petroleum Geology (1988, Algeria)

Training, research and publications: Research on offshore exploration.

Languages other than mother tongue: French

Present function(s): (1988- ) Technical Officer, Department of Geology, Directorate of Development and Conservation of Hydrocarbons, Ministry of Energy

Previous position(s):

Experience in the field: Analysis of test wells and well logs for exploration.

Training programme of interest: Government has nominated applicant for a traineeship in marine geology under the training programme offered by the Russian Federation.

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## INDIA - EXPLORATION GEOPHYSICS

Name: BOAMAH, Kwame Odame (Ghana) - Age 37

Education: M.Sc., Geophysics (Mining Engineer Geophysicist) - geophysical methods of prospecting and exploration of mineral deposits (1986, Russian Federation)

Training, research and publications: Training course in offshore non-fuel mineral resources (2 weeks). Master's thesis; and co-author of two publications.

Languages other than mother tongue: English, Russian

Present function(s): (October 1988- ) Geophysicist, Geological Survey Department

Previous position(s): (November 1986-October 1988) Worked as National Service Personnel, Geophysics Section, Geological Survey Department

Experience in the field: Geological prospecting at cement raw material deposit. Use of magnetic and gravimetric methods for delineating magnetized zones and heavy mineral concentrations; interpretation of geophysical data; exploration of manganese deposits.

Training programme of interest: Government has nominated applicant for a traineeship in exploration geophysics under the training programme offered by India.

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Name: KELKAL, Mourad (Algeria) - Age 34

Education: Diplôme d'Etat d'Ingénieur, Petroleum Geology (1983, Algeria)

Training, research and publications:

Languages other than mother tongue: French, English (attending course since March 1992)

Present function(s): (1992- ) Research Engineer, Division for the Coordination of Policies for Basins (Oued mya and Mouydir basins), national enterprise SONATRACH

/...

Previous position(s): (1989-1991) Engineer, Chief of research and prospecting project on raw materials for construction, National Enterprise for Research and Development of Construction Materials (E.N.D.M.C.)
(1986-1988) Geological Engineer, Supervisor of drilling sites, Department of Operations, SONATRACH
(1984-1986) Teacher
(1983-1984) Internship, SONATRACH

Experience in the field: Not specified.

Training programme of interest: Government has nominated applicant for a traineeship in exploration geophysics under the training programme offered by India.

---

Name: MACLEAN, Abraham (Ghana) - Age 38

Education: M.Sc., Geological Engineering and Geophysics (1984, Romania)

Training, research and publications: 2-D seismic data processing (6 months, Nigeria). Five-day courses in the following: exploration geophysics: data acquisition, processing and interpretation; practical seismic interpretation; integrated subsurface mapping techniques; reservoir management for production geologists; log interpretation.

Languages other than mother tongue: English (good), Romanian

Present function(s): (1990-1992) Assistant Geophysicist, Exploration Department, Ghana National Petroleum Corporation (GNPC)

Previous position(s): (1989-1990) National Service Geophysicist, GNPC
(1988-1989) National Service Geophysicist, Ministry of Fuel and Power
(1985-1988) Self-employed as a consultant in geology and geophysics to road and building contractors and small-scale mine operators.

Experience in the field: Petroleum exploration: velocity log analysis; acquisition, processing and structural interpretation of seismic data.

Training programme of interest: India - exploration geophysics

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Name: N'GUESSAN, Oi N'Guessan Pierre (Côte d'Ivoire) - Age 32

Education: D.E.A., Tropical Ecology (1986, Côte d'Ivoire); M.Sc., Earth Sciences (1985, Côte d'Ivoire); D.U.E.S., Chemistry, Biology, Geology (1983, Côte d'Ivoire)

/...

Training, research and publications: Seminars on gravimetry; geotechnics for construction materials. Studies on geological cartography; erosion after deforestation. Missions on prospecting: certification of gold reserves and the possibility to extend the prospecting area; and identification of geochemical anomalies in zones with important concentrations of rare geological occurrences.

Languages other than mother tongue: French, English (good)

Present function(s): (1992- ) Chief of Mining Division, Department of Adminstration, Ministry of Mines and Energy

Previous position(s): (1987-1992) Research Officer, Mining Division, Department of Administration

Experience in the field: Management of artisanal exploitation of gold and diamonds. Organization of information for computer input.

Training programme of interest: India - exploration geophysics

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Name: SHWE, Nyunt (Myanmar) - Age 33

Education: M.Sc., Geology (1987, Myanmar); B.Sc., Geology (1983, Myanmar)

Training, research and publications:

Languages other than mother tongue: English (good)

Present function(s): (1984- ) Geophysicist Grade 5, Geophysical Department, Myanma Oil and Gas Enterprise

Previous position(s):

Experience in the field: Seismic data acquisition, processing and interpretation using a DEC VAX-11/780.

Training programme of interest: India - exploration geophysics

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Name: TUN, Than (Myanmar) - Age 37

Education: M.Sc., Geology (1981, Myanmar); B.Sc., Geology (1977, Myanmar)

Training, research and publications: Log interpretation (total of 6 weeks); reservoir simulation (1 week, Myanmar; 1 week, USA); reservoir geology (2 weeks, USA); production geology (10 days, Myanmar); computer programming - Fortran (2 months).

Languages other than mother tongue: English (good)

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Present function(s): (1989- ) Geologist Grade III (Well site and development Geologist), Myanma Oil and Gas Enterprise

Previous position(s): (1980-1989) Geologist Grade V (Field Geologist, Assistant Test Well geologist), Myanma Oil and Gas Enterprise

Experience in the field: Well site geology; subsurface and isopach mapping; computer-aided log analysis and interpretation.

Training programme of interest: India - exploration geophysics

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## RUSSIAN FEDERATION - MARINE GEOPHYSICS

Name: BALLA, Ibrahim (Sudan) - Age 34

Education: M.Sc. (Mining Engineer Geophysicist) - geophysical methods of prospecting mineral deposits (1985, Azerbaijan)

Training, research and publications:

Languages other than mother tongue: Russian, English (writing - competent; reading and speaking - fair)

Present function(s): (5 years) Geophysicist, Geological Research Authority of the Sudan (GRAS), Ministry of Energy and Mining

Previous position(s):

Experience in the field: Regional gravity surveys; resistivity and magnetic surveys; interpretation of data.

Training programme of interest: Marine geophysics

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Name: MUNYAO, Thomas M. (Kenya) - Age 32

Education: Applicant has completed his M.Sc. thesis in environmental studies (marine geology) and is waiting for the results (1990-1992, Kenya); B.Sc., Geology (1989, Kenya)

Training, research and publications: Training course in marine science (1 week).

Languages other than mother tongue: English

Present function(s): (1989- ) Assistant Research Officer (Marine Geology), Kenyan Marine and Fisheries Research Institute

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Previous position(s): (1989 - 2 months) Teacher, Migwani Boys' High School
(1988 - 3 months) Teacher, Ngelani Agricultural High School
(1985 - 1 year) Teacher, Mwala Girls' High School

Experience in the field: Not specified.

Training programme of interest: Marine geophysics

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Name: TEPSUWAN, Thawatchai (Thailand) - Age 33

Education: B.Sc., Physics (1982, Thailand)

Training, research and publications: Marine geology (1 month, France); offshore prospecting (6 months, Japan); marine seismic survey and interpretation (2 months, France); marine geophysical survey and interpretation (1 month, Scotland).

Languages other than mother tongue: English

Present functions(s): Geophysicist, Offshore Mineral Exploration Subdivision, Economic Geology Division, Department of Mineral Resources, Ministry of Industry

Previous position(s):

Experience in the field: Not specified.

Training programme of interest: Russian Federation - marine geophysics

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NO PREFERRED PROGRAMME - QUALIFIED IN GEOPHYSICS

Name: ABDELLAOUI, Ahmed (Algeria) - Age 32

Education: Diplôme d'Etat d'Ingénieur, Geophysics (1985, Algeria)

Training, research and publications: Research in offshore exploration.

Languages other than mother tongue: French

Present function(s): (1985- ) Technical Officer, Department of Geophysics, Directorate of Development and Conservation of Hydrocarbons, Ministry of Energy

Previous position(s):

Experience in the field: Seismic interpretation; analysis of test wells for exploration

Training programme of interest: Not specified.

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## INDIA - CHEMICAL ENGINEERING

Name: FRANGOUL, Tamim Niazi (Iraq) - Age 28

Education: M.Sc., Chemical Engineering (1989, Iraq); B.Sc., Chemical Engineering (1986, Iraq)

Training, research and publications:

Languages other than mother tongue: Studied English at university.

Present function(s): Applicant is doing his Ph.D., College of Chemical Engineering.

Previous position(s): (2 years) Lecturer, Chemical Engineering Department, University of Technology
(18 months after B.Sc.) Compulsory army service
(6 months after M.Sc.) Army service

Experience in the field: Not specified.

Training programme of interest: Government has nominated applicant for a traineeship in chemical engineering under the training programme offered by India.

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Name: HAMIDI, Ali Asgher (Iran (Islamic Republic of)) - Age 33

Education: Ph.D. (1987, U.K.); B.Sc., Chemical Engineering and Fuel Technology (1983, U.K.)

Training, research and publications: Author of one article; co-author of 3 articles, and 4 papers presented at international symposia, an international conference and a seminar. Applicant submitted an abstract of his Ph.D. thesis.

Languages other than mother tongue: English

Present function(s): Not clear. Applicant is carrying out post-doctoral studies at the Department of Chemical Engineering and Fuel Technology, University of Sheffield. He is preparing papers reporting the experimental findings of the diesel spray characterization at high ambient pressures, i.e., the results of the Ph.D. investigation.

Previous position(s): (1986-1987) Research Fellow, Department of Chemical Engineering
(1983-1986) Supervisor of undergraduate students in the computing and laboratory sessions.
Numerous short-term consultancies carried out for a variety of establishments (Micropore Ltd, Malvern Instruments Ltd, CPF Technologies Ltd, Leicester Polytechnic, British Crop Protection Council, etc.)
(Summer 1982) Research Assistant in the Department of Chemical Engineering

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Experience in the field: Not specified.

Training programme of interest: India - chemical engineering

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Name: KYAW, Aye Aye (Myanmar) - Age 43

Education: M.Sc., Chemical Engineering (1985, Myanmar); B.Sc., Chemical Engineering (1972, Myanmar)

Training, research and publications:

Languages other than mother tongue: English (good)

Present function(s): (1989- ) Lecturer, Department of Chemical Engineering, Yangon Institute of Technology

Previous position(s): (1987-1989) Assistant Lecturer, Department of Chemical Engineering
(1973-1987) Instructor, Department of Chemical Engineering

Experience in the field:

Training programme of interest: India - chemical engineering

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RUSSIAN FEDERATION - MARINE ECOLOGY

Name: HASSAN, Fikrat Majied (Iraq) - Age 32

Education: M.Sc., Biology - Ecophysiology of Algae (1989, Iraq); B.Sc., Hydrobiology

Training, research and publications: Published three papers on phytoplankton populations; groundwater evaluation; and a limnological study of a river.

Languages other than mother tongue: Not specified. Application is in English.

Present function(s): (1991- ) Assistant Lecturer, College of Science, University of Babylon

Previous position(s): (1989-1991) Assistant Lecturer, University of Kufa

Experience in the field: Not specified.

Training programme of interest: Government has nominated applicant for a traineeship in marine ecology under the training programme offered by the Russian Federation.

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Name: MUTWALLI, Samir A. (Saudi Arabia) - see page 8 of the present document.

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Name: OKONDO, Julius Philip (Kenya) - Age 31

Education: B.Sc., Botany, Zoology, Ecology (1989, Kenya)

Training, research and publications:

Languages other than mother tongue: English

Present function(s): Assistant Research Officer, Kenyan Marine and Fisheries Research Institute

Previous position(s):

Experience in the field: Community structure and dynamics of meiobenthos in mangrove ecosystems.

Training programme of interest: Marine ecology

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NO PREFERRED PROGRAMME OR TRAINEESHIP

Name: AL-MOHDAR, Alawi Mohamed (Yemen) - Age 32

Education: M.Sc., Oceanology (Engineer-Oceanologist) (1988, Ukraine)

Training, research and publications: One publication on the hydrological and hydrochemical conditions of the Gulf of Aden.

Languages other than mother tongue: English (course July 1988 to March 1990), Russian

Present function(s): (4 years) Researcher (physical oceanography and meteorology of the Gulf of Aden), Marine Science and Resources Research Centre

Previous position(s):

Experience in the field: Participated extensively in oceanographic cruises (not specified).

Training programme of interest: Not specified.

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Name: NASSER, Gamal Abdulla (Yemen) - Age 33

Education: M.Sc., Oceanology (Engineer-Oceanologist) (1987, Russian Federation)

/...

Training, research and publications: Computer training in Basic, Fortran and dBase (3 months). Three publications on oceanographic conditions in the Gulf of Aden.

Languages other than mother tongue: English (course July 1988 to March 1990), Russian

Present function(s): (5 years) Researcher (physical oceanography), Marine Science and Resources Research Centre

Previous position(s):

Experience in the field: Participated extensively in oceanographic cruises (not specified).

Training programme of interest: Not specified.

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LOS/PCN/TP/1993/CRP.16
23 March 1993

ENGLISH
ORIGINAL: FRENCH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Eleventh session
Kingston, Jamaica
22 March-2 April 1993

# REPORT ON THE IMPLEMENTATION OF THE FRENCH TRAINING PROGRAMME

Submitted by the delegation of France

I. Traineeship of Mr. Ahmed BRAHAM, a national of Tunisia, in the area of mineral geology.

- from November 1992 to March 1993, "Diploma of Higher Specialized Studies - Development of the resources of the subsoil" at the Centre d'enseignement supérieur en exploitation et valorisation des ressources minérales (CESEV), in NANCY:

  mineral raw materials,

  geological and economic data,

  development of underwater resources,

  techno-economic possibilities and limitations.

- in April 1993, traineeship at the Bureau de recherches géologiques et minières (BRGM) on subsoil data banks:

  geological, technical, mineral and economic data banks on the subsoil,

  basic principles, management and use of data banks,

- in May and June 1993, practical application of the traineeship on data banks at CESEV in NANCY.

/...

- in July and August 1993, traineeship at the Institut français de recherche pour l'exploitation de la mer (IFREMER) on underwater resources:

  underwater data banks,

  introduction to the technology and economics of underwater resources.

II. Traineeship of Mr. Kaiser Gonçalvez de SOUZA, a national of Brazil, in the area of mineral geology.

- from October 1993 to March 1994, "Diploma of Higher Specialized Studies - Development of the resources of the subsoil" at CESEV in NANCY

- from April 1994 to August 1994, participation in the campaign of exploration of the site reserved for the Authority, followed by practical application at CESEV in NANCY of the data collected during the sea campaign:

  geology and geographical distribution of manganese nodules,

  chemical and economic characteristics of manganese nodules,

  technological data for the prospecting, exploitation and processing of manganese nodules.

III. Traineeship of Mr. Mamadou NDIAYE, a national of Senegal, in the area of geophysics and data processing.

- from October 1993 to March 1994, Diploma of Higher Specialized Studies at the Ecole nationale supérieure du pétrole et des moteurs (ENSPM).

- from April 1994 to August 1994, participation in the same campaign of exploration of the site reserved for the Authority as Mr. de SOUZA, followed by practical application at ENSPM of the data collected during this sea campaign.

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LOS/PCN/TP/1993/CRP.17
2 September 1993

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA

# POSTPONEMENT OF THE TRAINING PROGRAMMES OF CHINA AND GERMANY AND OF THE TRAINEESHIP IN CHEMICAL ENGINEERING OFFERED UNDER THE TRAINING PROGRAMME OF INDIA

## Note by the Secretariat

1. The General Committee of the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea, at its meetings on 31 March and 1 April 1993, requested the Secretariat to make the necessary adjustments to the draft notes verbales, contained in documents LOS/PCN/BUR/R.27 and R.28, in the event that the Panel would not be able to meet in the summer of this year.

2. When the Secretariat was informed that there would not be a summer meeting of the Preparatory Commission this year, it proceeded to contact the Governments of India, the People's Republic of China and Germany to request them to postpone their training programmes, since the traineeship in chemical engineering offered under the training programme of India was scheduled to begin in October 1993; and the training programmes of China and Germany were scheduled to begin in March 1994. India and China were requested to postpone their training programmes until the middle or towards the end of 1994. Germany was requested to postpone its training programme and to take the time factor into account in the revision of its programme. The Secretariat also drew attention to the fact that the training programmes of India and China, as well as the notes verbales announcing the traineeships offered under those programmes, would need to be revised to reflect any change in the commencement of the implementation of the training programmes.

3. India informed the Secretariat, in a letter dated 5 August 1993, that it approved the postponement of the traineeship in chemical engineering until the end of 1994. The exact month for the beginning of the traineeship would be intimated as soon as the candidate was selected by the Training Panel at its next meeting.

/...

4. China informed the Secretariat, in a letter dated 18 August 1993 and transmitted by the Permanent Mission on 24 August 1993, that it agreed to the postponement of its training programme. The specific time for the implementation of the programme would be raised by the Chinese experts at the next meeting of the Training Panel.

5. In order to reflect the change in commencement of the training programmes, the Secretariat has proceeded to issue a corrigendum to the training programme of India contained in documents LOS/PCN/TP/1992/CRP.8 and Corr.1; and a corrigendum to the training programme of China contained in document LOS/PCN/TP/1993/CRP.13/Rev.1. The notes verbales which will be sent out to Governments have also been revised accordingly. A further revision in the notes verbales relates to the date of submission of applications to the Secretariat, which is now 31 December 1993.

LOS/PCN/TP/1994/CRP.18
17 January 1994

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA

# PROPOSAL FOR A TRAINING PROGRAMME FOR MANAGERS, POLICY AND PROJECT PLANNERS FOR THE ENTERPRISE OF THE INTERNATIONAL SEABED AUTHORITY, UPON THE ENTRY INTO FORCE OF THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

Submitted by the International Ocean Institute

## Background

The report of the first meeting of the Training Panel to the General Committee of the Preparatory Commission (LOS/PCN/BUR/R.9) dated 21 August 1991, stated that:

> "(T)he Chairman of the International Ocean Institute submitted a five-week training programme including a cruise on a research vessel to the Training Panel. The course, which will include an introduction to the Law of the Sea Convention and an introduction to oceanography, will focus on mining economics, high-technology development and management, project planning and project funding. The Chairman of the International Ocean Institute indicated that the Institute could accept and fund 16 participants every year.
>
> "The Panel will consider this submission and any other submission at the next session in Kingston, Jamaica." (ibid., paras. 11-12)

During the past year, the International Ocean Institute (IOI) has conducted consultations with the China Ocean Mineral Resources Research and Development Organization (COMRA) and the Indian Institute of Technology (IIT) in Madras, where IOI has established an operational centre (IOI India). We are now in a position to give more detailed information and to submit a draft syllabus for the programme.

## Organization

The programme will be carried out as a joint undertaking of IOI India and COMRA. The participation of Japanese experts will also be invited. In October 1993, the course will take place in China; in 1994 the venue will be IIT, Madras, India. The course will last five weeks and be very intensive in character (150 classroom hours plus research time and field trips). No more than 16 participants, who should have some background in technology management and economics, will be admitted. About half the participants will be Chinese; the other half will be international. The course director will be Dr. Joseph Warioba, formerly Chairman of the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea, and Prime Minister of the United Republic of Tanzania, and a member of the IOI Board of Trustees.

## Course content

The course will offer an introduction to the United Nations Convention of the Law of the Sea, the work of the Preparatory Commission and the pioneer regime. It will focus on the joint exploration of a first mine site for the Enterprise and examine the state-of-the-art technologies required for exploration, exploitation, processing and environmental and economic impact assessment. It will cover technology forecasting, technology selection, project planning, development and evaluation. It will examine the spin-off effects of the high technologies involved, for the sustainable development of the exclusive economic zone. In short, it will deal with the acquisition, management and development of high technologies in developing countries in their scientific/technological, economic, social and environmental aspects. It will do this in the broader context of the ongoing fundamental changes in the global economy.

## Applications

Applications should be addressed to:

Dr. Krisnan Saigal
Executive Director
International Ocean Institute
P.O. Box 524
Valletta, Malta

An application form and additional information will then be sent to all applicants.

A draft syllabus is contained in the annex to the present document.

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## Annex

## FIVE-WEEK COURSE IN MANAGEMENT OF DEEP-SEA MINING OPERATIONS: ORGANIZATIONAL, FINANCIAL, ECONOMIC

### Week 1

Monday: Introduction to the law of the sea. Events leading up to the Third United Nations Conference on the Law of the Sea. Main issues. Organization of the Conference. Spaces under national jurisdiction.

Tuesday: Chapter XII. Environmental issues and link-up with the United Nations Conference on Environment and Development (UNCED), marine scientific research, transfer of technology. Chapter XI. Common heritage of mankind. The International Seabed Authority, the Enterprise.

Wednesday: Commission on the Limits of the Continental Shelf (Annex II). Conditions for prospecting, exploration and exploitation (Annex III). Financial terms of contract.

Thursday: The Enterprise. Its statute (Annex IV), system of governance, links with the International Seabed Authority, finances, operating systems, transfer/acquisition of technology, legal status, immunities.

Friday: Workshop I. Alternative operating models of the Enterprise in the context of North-South, East-West cooperation (group work).

### Week 2

Monday: Setting up of the Preparatory Commission. Resolutions I and II. Arusha Understanding. Registration of pioneer investors. Obligations of pioneer investors.

Tuesday: Work of Special Commissions 1, 2, 3 and 4.

Wednesday: Deep-sea mining technology. Developments 1983-1993.

Thursday: The economics of deep-sea mining. The MIT paper (1978). Subsequent developments. The Australian paper. Latest position - the French and Norwegian studies.

Friday: Workshop II. Preparation of the position paper outlining alternative technology acquisition options for the Enterprise (group work).

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Week 3

Monday: Investment appraisal methods for the private and public sectors. Nonlinearities in state-of-the-art technologies. Quantum jump possibilities.

Tuesday: Uncertainties in developing a project profile for the Enterprise. Methods of tackling them and for managing market, financial and economic uncertainty.

Wednesday: Preparation of project profiles in conditions of uncertainty. Methods of future casting; links with technology acquisition strategies. Technology fusion as opposed to technology development.

Thursday: Development of deep-sea mining technology: Case studies:

- Multinational consortia
- France
- Japan
- India
- China
- Russian Federation

Friday: Workshop III. Development of a financial and economic profile for the Enterprise (group work).

Week 4

Monday: Methods of fund-raising projects. Suppliers' credit, floatation of bonds, etc. Leverage and its implications. Capital budgeting for a state-of-the-art project.

Tuesday: Research and development. Funding alternatives. Systems configuration and development. Systems for managing and selecting projects. Flexible, adaptive organizations. Matrix system. High-tech project management.

Wednesday: Joint ventures. Equity, contract, management and service types. Advantages of joint ventures with pioneer investors. Joint technology development. Japanese, European, United States systems. Security and sustainability.

Thursday: Metals demand. Land vs. ocean resources. Impact on developing country land-based producers. Processing systems. Metal recovery systems (three to seven metal recoveries). Ocean mining in the broad context of international equity.

Friday: Workshop IV. Development of an integrated project for the Enterprise consisting of technology, research and development, operational, processing and marketing options.

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Week 5

| | |
|---|---|
| Monday )<br>Tuesday) | Workshop IV (continued) |
| Wednesday)<br>Thursday ) | Individual research and report writing on different topics to be selected by participants in consultation with the Director. |
| Friday: | Final presentation and closing ceremony. |

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LOS/PCN/TP/1994/CRP.19
20 January 1994

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Twelfth session
Kingston, Jamaica
7-11 February 1994

# SYNOPSIS OF THE APPLICATIONS SUBMITTED FOR THE TRAINEESHIPS UNDER THE TRAINING PROGRAMMES OFFERED BY CHINA AND THE INTEROCEANMETAL JOINT ORGANIZATION AND ITS CERTIFYING STATES AND FOR THE TRAINEESHIP IN CHEMICAL ENGINEERING UNDER THE TRAINING PROGRAMME OFFERED BY INDIA

Note by the Secretariat

## INTRODUCTION

1. The present document was prepared by the Secretariat for the convenience of the members of the Training Panel. It contains a synopsis of the information submitted by each applicant for a traineeship under the training programmes offered by China and the Interoceanmetal Joint Organization (IOM) and its certifying States, or for a traineeship in chemical engineering under the training programme offered by India, and is intended to give the members of the Panel a quick overview of the applicants' qualifications. The complete file of each applicant will be available for the meeting, but only in the original language of submission.

2. The applications have been organized according to the disciplines offered in the traineeships, i.e., marine geology, marine geophysics, geophysics, metallurgical engineering and chemical engineering. No applications have been submitted for the traineeship in marine ecology under the training programme offered by IOM and its certifying States.

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## CHINA - MARINE GEOLOGY

List of applicants by country and geographical region

### AFRICA

| Name | Country | Page |
|---|---|---|
| Mohamed Ali Idris ELFAHAL | Sudan | 163 |
| Elnour Koko MOHAMED | Sudan | 165 |
| Mourad KELKAL | Algeria | 164 |

### ASIA

| Name | Country | Page |
|---|---|---|
| Safa A. A. AL-JANABI | Iraq | 163 |
| Ali Jaffer SADIQ | Iraq | 165 |
| Tai-Ho KWON | Republic of Korea | 164 |

## CHINA - MARINE GEOPHYSICS

List of applicants by country and geographical region

### AFRICA

| Name | Country | Page |
|---|---|---|
| Ali Ibrahim AHMED | Sudan | 166 |
| Ibrahim Sarour BALLA | Sudan | 166 |

## IOM - GEOPHYSICS

List of applicants by country and geographical region

### ASIA

| Name | Country | Page |
|---|---|---|
| Jong-Nam KIM | Republic of Korea | 167 |

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Page

WESTERN EUROPE AND OTHER STATES

| Name | Country | |
|---|---|---|
| Erminia Mallia ZARB | Malta | 167 |

CHINA - METALLURGICAL ENGINEERING

List of applicants by country and geographical region

ASIA

| Name | Country | |
|---|---|---|
| Kyung-Soo CHOI | Republic of Korea | 169 |

EASTERN EUROPE

| Name | Country | |
|---|---|---|
| Natalya CHIGRINOVA | Belarus | 168 |

IOM - METALLURGICAL ENGINEERING

List of applicants by country and geographical region

EASTERN EUROPE

| Name | Country | |
|---|---|---|
| Alexandr SHEVCHYONOK | Belarus | 169 |

INDIA - CHEMICAL ENGINEERING

List of applicants by country and geographical region

ASIA

| Name | Country | |
|---|---|---|
| Saad M. IELEA | Iraq | 170 |

IOM - MARINE ECOLOGY

There are no applicants for this traineeship.

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## CHINA - MARINE GEOLOGY

Name: AL-JANABI, Safa A. A. (Iraq) - Age 33

Education: M.Sc., Geology - Sedimentology (1986, Iraq); B.Sc., Geology (1983, Iraq)

Training, research and publications: M.Sc. thesis: "Sedimentological and mineralogical studies of the upper cretaceous sequence in well (KH-6) at Ansab area in south Iraq".

Languages other than mother tongue: English

Present function(s): (1993- ) Assistant Lecturer, Department of Geology, University of Baghdad

Previous position(s): (1989-1993) Assistant Lecturer, Iraqi Museum of Natural History, University of Baghdad
(1986-1989) National service

Experience in the field: Member of the Supervisory Committee of Field Geology - administrative work.

Training programme of interest: Marine geology

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Name: ELFAHAL, Mohamed Ali Idris (Sudan) - Age 40

Education: M.Sc., Quaternary Geology - Stratigraphy (1985, Belgium); B.Sc., Geology (1979, Sudan)

Training, research and publications: M.Sc. thesis on stratigraphy and sedimentation north of Belgium.

Languages other than mother tongue: English

Present function(s): (1979- ) Geologist in a supervisory capacity, Geological Research Authority of the Sudan

Previous position(s):

Experience in the field: Regional mapping and mineral prospecting of different areas of Sudan: supervised field mission to Red Sea hills; participated in prospecting for uranium deposits; supervised field mission to evaluate black sands along the Red Sea coast.

Training programme of interest: Government has nominated applicant for a traineeship in marine geology.

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Name: KELKAL, Mourad (Algeria) - Age 35

Education: Diplôme d'Etat d'Ingénieur, Petroleum Geology (1983, Algeria)

Training, research and publications: Research in mining. Short courses in sedimentology, diagenesis and porosity of carbonates; estimation of reserves; geochemistry and basin analysis; naturally fractured reservoirs. Computer expertise: utilization of the BRGM (Paris) GDM system (Mining Data Management); BASIC; NEWS, Microsoft Windows, FRAMEWORK, Harvard Graphics, SURFER, AUTOCAD.

Languages other than mother tongue: French, English (speaks - quite well; reads and writes - well. Applicant is currently attending courses.) Elementary knowledge of Russian.

Present function(s): (1992- ) Research Engineer for the Mouydir and Qued Mya district, Division for Exploration, national enterprise SONATRACH

Previous position(s): (1989-1991) Research Engineer - Level III, Unit for Research and Geological Studies (U.R.E.G.), Boumerdes
(1986-1988) Supervisor of drilling sites, Division for Exploration, SONATRACH
(1984-1986) Teacher (military service)
(1983-1984) Internship, Division for Exploration, SONATRACH

Experience in the field: Petroleum exploration

Training programme of interest: China - marine geology

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Name: KWON, Tai-Ho (Republic of Korea) - Age 35

Education: M.Sc., Geology (1985, Korea); Licence in Applied Geological Engineering (1980, Korea), B.Sc., Geology (1980, Korea)

Training, research and publications: M.Sc. thesis: "Trace element in biotite and feldspars of the Cretaceous granitic rocks in relation to mineralization in Onjongri-Palgongson-Chindong area, Korea". Training in coal geology (four months, Australia); two technical training courses on mineral resources exploration and development.

Languages other than mother tongue: English

Present function(s): (1993- ) Geologist, Division of International Cooperation, Department of Overseas Mineral Resources, Korea Mining Promotion Corporation. In charge of Joint Mineral Resources Survey and technical training programme on "Mineral Resources Exploration and Development".

Previous position(s): (1989-1993) Geologist, Department of Mineral Resources Information, Korea Mining Promotion Corporation
(1987-1989) Geologist, Department of Coal Fields Survey
(1984-1987) Geologist, Department of Mineral Deposits Survey

/...

Experience in the field: Participated in deep seabed nodule exploration project. Conducted preliminary surveys on mineral resources in Australia and New Caledonia, South Africa and Namibia, the Russian Federation and China.

Training programme of interest: China - marine geology

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Name: MOHAMED, Elnour Koko (Sudan) - Age 38

Education: Postgraduate Diploma, Geological Sciences (1989, Canada); B.Sc., Geological Sciences (1979, Sudan)

Training, research and publications: Postgraduate Diploma involved, inter alia, courses on plate tectonics, depositional environments and sedimentary processes, structure and sedimentation of basins in deep and shallow seas, exploration geochemistry and sources of metal in disseminated mineral deposits.

Languages other than mother tongue: English

Present function(s): (1979- ) Geologist, Geological Research Authority of the Sudan

Previous position(s):

Experience in the field: Geological mapping; exploration and evaluation of marble used in the cement industry; exploration for iron ore deposits, industrial minerals and gold.

Training programme of interest: China - marine geology

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Name: SADIQ, Ali Jaffer (Iraq) - Age 38

Education: M.Sc., Geology/Geochemistry (1985, Iraq); B.Sc., Geology (1978, Iraq)

Training, research and publications: M.Sc. thesis: "Surface/subsurface mineralogical and geochemical study of clays and iron ores in Palaeozoic rocks in the western desert, Iraq". Co-authored four articles on the mineralogy and geochemistry of various regions in Iraq (copies of the articles are attached to the c.v.).

Languages other than mother tongue: English

Present function(s): (1990- ) Lecturer in Geochemistry Ore Microscopy and Optical Mineralogy, Department of Geology, University of Baghdad.

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Previous position(s): (1985-1990) Assistant Lecturer, Department of Geology
(1980-1982) Demonstrator, Department of Geology
(1978-1980) National service

Experience in the field: Member of the Supervisory Committee of Field Geology - administrative work.

Training programme of interest: Marine geology

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CHINA - MARINE GEOPHYSICS

Name: AHMED, Ali Ibrahim (Sudan) - Age 34

Education: M.Sc., Geology (Mining Engineer Geophysicist) - geophysical methods of prospecting mineral deposits (1986, Azerbaijan)

Training, research and publications: M.Sc. thesis: "Geological/geophysical characteristics of Y-YII deposits in the productive strata of horizons at the Sangachaly-Duvany-Bulla field according to GIS".
Seminar on open borehole logging (Schlumberger Well Surveying Corporation).

Languages other than mother tongue: English, Russian

Present function(s): (1991- ) Geophysicist, Geological Research Authority of the Sudan

Previous position(s): (1987-1990) Teacher in physics, Yemen Arab Republic

Experience in the field: Geophysical work involving seismic, gravity and resistivity methods. Land and offshore geophysical activities including mineral exploration, hydrocarbon prospecting, groundwater investigation.

Training programme of interest: Marine geophysics

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Name: BALLA, Ibrahim Sarour (Sudan) - Age 35

Education: M.Sc., Geology (Mining Engineer Geophysicist) - geophysical methods of prospecting mineral deposits (1985, Azerbaijan)

Training, research and publications: M.Sc. thesis: "The project of seismic prospecting work 'MOGT' in the Ragimly-Padar-Kalamadyn area".

Languages other than mother tongue: English, Russian

Present function(s): (1988- ) Geophysicist, Geological Research Authority of the Sudan

Previous position(s):

/...

Experience in the field: Regional gravity surveys; seismic work; resistivity and magnetic surveys.

Training programme of interest: Marine geophysics

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IOM - GEOPHYSICS

Name: KIM, Jong-Nam (Republic of Korea) - Age 35

Education: M.Sc., Engineering - Geophysics (1989, Korea); Licence in Computer Data Processing Engineering (1984, Korea); B.Sc., Engineering - Mineral and Petroleum Engineering (1982, Korea)

Training, research and publications: M.Sc. thesis: "Numerical Modelling on the Electrical Resistivity using Alpha-centres" (computerized numerical modelling).

Languages other than mother tongue: English

Present function(s): (1993- ) Geophysicist, Department of Technology Management, Korea Mining Promotion Corporation

Previous position(s): (1989-1993) Geophysicist, Department of Overseas Mineral Resources, Korea Mining Promotion Corporation
(1987-1989) Geophysicist, Department of Mineral Deposits Survey

Experience in the field: Currently is participating in the Manganese Exploration Project in the Clarion-Clipperton Zone. Conducted preliminary mine surveys in Australia (bituminous coal, copper), Canada (copper, zinc), India (manganese), Indonesia, the Philippines, South Africa and Namibia. Participated in joint mineral exploration in Indonesia.

Training programme of interest: IOM - geophysics

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Name: ZARB, Erminia Mallia (Malta) - Age 21

Education: Currently pursuing an M.Sc. in Geophysics at the University of Malta (written exam in summer of 1994; expected to graduate in 1995);
B.Sc., Physics and Mathematics (1993, Malta)

Training, research and publications: B.Sc. project on "The Electrodynamic Geophone - its design, construction and testing".

Languages other than mother tongue: Fluent in English and Italian

Present function(s): M.Sc. student. Works at the Oil Exploration Division of the Office of the Prime Minister during the summer months.

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Previous position(s):

Experience in the field: Took part in an offshore seismic survey.

Training programme of interest: IOM - geophysics

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CHINA - METALLURGICAL ENGINEERING

Name: CHIGRINOVA, Natalya (Belarus) - Age 41 according to marriage certificate, but applicant states in c.v. that she was born in 1955

Education: Diploma, Technical Sciences - processes developing on the contact zones of metal explosion welding at micro and sub-micro levels (1986, Belarus); Degree in Engineering - mechanical construction (1974, Belarus)

Training, research and publications: Course on the diffusion process in powder composite materials based on steel with less hard alloys (one year, Josef Stefan Institute (Ljubljana, Slovenia). Published over 30 scientific papers in Belarus, the United States, Japan, Germany, Czechoslovakia, Italy and Yugoslavia. Was awarded diploma papers and medals from the former USSR Exhibition of National Economic Achievements.

Languages other than mother tongue: Russian, English (fluent), some knowledge of Slovenian

Present function(s): Currently Chief Scientist, National Association for Research and Production in Powder Metallurgy

Previous position(s): (1992-1993) Senior Scientist, National Association for Research and Production in Powder Metallurgy
(1981-1992) Scientist, Department of Composite Materials, Institute for Science and Research for Powder Metallurgy (later became part of the National Association)
(1979-1981) Junior Scientist
(1974-1979) Engineer

Experience in the field: Specialist in powder metallurgy and impulse technologies, material science, physical chemistry. Ultrasound treatment of materials. Experience in processing composite materials through explosion.

Training programme of interest: China - metallurgical engineering

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Name: CHOI, Kyung-Soo (Republic of Korea) - Age 38

Education: Ph.D., Engineering - mineral processing and hydrometallurgy (1987, Korea); M.Sc., Engineering - mineral processing and hydrometallurgy (1983, Korea); B.Sc., Engineering (1981, Korea); Licence in Chemical Engineering (1980, Korea)

Training, research and publications: Ph.D. thesis: "A study on the characteristics of coagulation of ultrafine scheelite and calcite minerals". Visiting researcher at Virginia Polytechnic Institute (five months). Published articles on the adsorption of sodium silicate on calcium minerals; and on the coagulation and dispersion of ultrafine cholorite. Prime Minister Award in development of technology and science.

Languages other than mother tongue: English

Present function(s): (1987- ) Senior researcher, Technology and Research Centre, Korea Mining Promotion Corporation

Previous position(s): (1982-1986) Assistant teacher, Chonnam National University

Experience in the field: Conducted study of the separation and hydrometallurgy of metallic and non-metallic minerals using chemical and physical methods. Is studying the extraction of deep seabed manganese nodules by acid treatment.

Training programme of interest: China - metallurgical engineering

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IOM - METALLURGICAL ENGINEERING

Name: SHEVCHYONOK, Alexandr (Belarus) - Age 38

Education: Diploma, Technical Sciences (1988, Moscow); one year post-graduate course in technique and technology (1983, Moscow); Degree in Physics (1979, Belarus)

Training, research and publications:

Languages other than mother tongue: Russian, English (two-year course), German (reading only)

Present function(s): (1987- ) Senior Scientist, National Association for Research and Production in Powder Metallurgy

Previous position(s): (1983-1986) Researcher, Moscow Steel and Alloy Institute
(1982-1983) Trainee, Moscow Steel and Alloy Institute
(1979-1982) Trainee, Institute for Science and Research of the Physics of Solids, Academy of Sciences

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Experience in the field: Specialist in the field of impulse technologies. Involved in creating new materials with enhanced functional properties. Ultrasound treatment of materials. Research on physical and chemical synthesis of ceramic and metallic powders and their composites.

Training programme of interest: IOM - metallurgical engineering

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INDIA - CHEMICAL ENGINEERING

Name: IELEA, Saad M. (Iraq) - Age 31

Education: B.Sc., Metallurgical Engineering (1989, Iraq); Technical Diploma in Metal Manufacturing (1983, Iraq)

Training, research and publications:

Languages other than mother tongue: English

Present function(s): Metallurgical Engineer, University of Technology. Prepares short courses in Heat Treatment and Metallurgy.

Previous position(s):

Experience in the field: Designed an erosion/corrosion system.

Training programme of interest: Government has nominated applicant for a traineeship in chemical engineering under the training programme offered by India.

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LOS/PCN/TP/1994/CRP.20
7 February 1994
ENGLISH
ORIGINAL: FRENCH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Twelfth session
Kingston, Jamaica
7-11 February 1994

# REPORT ON THE TRAINING OF THREE TRAINEES IN FRANCE

Submitted by the delegation of France

The three trainees selected by the General Committee of the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea on the recommendation of the Training Panel either concluded or commenced their training in France:

- M. Ahmed Braham, a national of Tunisia, arrived in France in November 1992 for training in mining geology. He went first to the Centre for Higher Education in the Exploration and Exploitation of Mineral Resources (CESEV) at the Ecole nationale supérieure de géologie appliquée at Nancy to participate in the training programme organized by that body. In May 1993 he was able, as part of that training, to attend a course on the subsoil database of the Office of Geological and Mining Research in Orleans. He then attended the IFREMER research centre at Brest from 1 July 1993 to acquaint himself with the characteristics of deep-seabed deposits, the methods of exploration used in prospecting them and the technologies contemplated for their exploitation. During this period, he conducted a personal study on the evaluation of the resources in the Clarion-Clipperton zone, based on information taken from the IFREMER/AFERNOD database. In the course of this work, he employed specialized software for the geostatic processing of mining data on a computer workstation and a microcomputer. Mr. Ahmed Braham's training concluded, very satisfactorily, in September 1993. A certificate, a copy of which is attached, regarding this training course has been sent to the Chairman of the Preparatory Commission for the information of its officers;

- Mr. Kaiser Gonçalves de Souza, a national of Brazil, began his training in mining geology in October 1993 when he reported to CESEV at the Ecole nationale supérieure de géologie appliquée at Nancy. In April 1994 he will go to the IFREMER research centre at Brest to complete his training in the geology of deep-seabed deposits, the methods of exploration used in prospecting them and the technologies for their exploitation;
- Mr. Mamadou N'Diaye, a national of Senegal, arrived in France at the beginning of October 1993 for training in geophysics and data processing. He went first to the Ecole nationale supérieure du pétrole et des moteurs at Rueil-Malmaison to attend a course focusing on the use of mathematical methods in geophysics. Upon completion of this course, which will end at the beginning of February 1994, he is to report to the IFREMER centre at Brest to complete his training in the geophysical methods used in the exploration of the seabed. He will also be instructed in the characteristics of the polymetallic nodule deposits, exploration methods other than geophysical ones and the technologies which should make it possible to exploit these deposits.

The last two trainees will participate in a seabed mapping exercise using multibeam sounders.

LOS/PCN/TP/1994/CRP.21
7 February 1994

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Twelfth session
Kingston, Jamaica
7-11 February 1994

# TRAINING PROGRAMME PROPOSAL FOR THE PREPARATORY COMMISSION OF THE INTERNATIONAL SEABED AUTHORITY

Prepared for the meeting of the panel in February 1994 in Kingston, Jamaica

Submitted by the delegation of Germany

1. Germany is prepared to receive a group of four trainees for a period of about 18 months beginning in November 1994.

2. The training programme on deep-sea minerals and mining is designed to convey a broad knowledge of all matters related to the use of non living resources and of its environmental protection including the economical, ecological and social aspects.

The managerial staff and future political decision makers of the Seabed Authority should be enabled to to realize and to reflect the complexity of the different aspects and be trained how to approach multidisciplinarily the ecological and economical consequences of deep-sea mining focussing on the fields of natural and social sciences, engineering, economy and legislation and furthermore to consider the latest progress in research and to develop suggestions for further steps to be taken in the future.

A description of the training programme is provided in the annex to the present document.

3. The training programme will be carried out in interrelated stages

3.1 Language course

Prior to the further professional training, the trainee shall attend a six month German language course at one of the CDC Language Centers (Carl Duisberg Centers) in Germany.

Successful candidates are advised to attend a German language course already before leaving for Germany. The costs shall be reimbursed by the diplomatic representations of the Federal Republic of Germany.

3.2 Introductory seminar:

The specific training scheme is preceded by a four week introductory seminar to prepare the trainee for the daily life in the Federal Republic of Germany and to give an overview on the general structure of the programme.

3.3 Professional training:

The language course is followed by the professional training programme.

3.4 General seminars:

Intermediate seminar: Three to four months after commencement of the professional training, CDG shall organize an intermediate seminar which is designed to:

- deal with problems and difficulties encountered at the training place and possibly to agree to a revision of the training plan
- examine the training content and identify options for practical application in the future.

3.5 Final seminar:

A final seminar shall be organized during the last weeks of the training measure for assessment and evaluation

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4. General qualifications of candidates

4.1 University graduates equivalent M.Sc. in science, marine biology, marine ecology, geophysics, geology, oceanology, environmental/ mining law / international.

4.2 At least two years practical experience in the candidates specialized field.

4.3 Ability to work on a personal computer

4.4 A sound knowledge of English

4.5 Upper age limit: 40 years

4.6 Good state of health both physically and mentally

5. The German Federal Ministry for Economic Cooperation and Development shall defray the costs related to the training programme.

The following shall be provided:

5.1 Scholarship

The scholarship holder shall receive a monthly grant. At present, the scholarship amounts up to 1.450,00 DM monthly.

5.2 International travel expenses, economy class. Local travel within the scope of the official programme.

5.3 Medical care shall be provided for the total duration of the training.

6. The trainees should be nominated by their Governments and confirmed by the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea.

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7. The following institutions are prepared to conduct the training programme:

Free University of Berlin

Experimental Institute for Hydro-engineering and Ship Building

University of Hamburg

University of Göttingen

Federal Institute for Geosciences and Natural Resources (BGR).

## Annex

Training Programme

**Phase 1**

Introductory seminar at the reception centre of the Carl Duisberg Gesellschaft e.V. in Saarbrücken followed by a German language course (6 months).

**Phase 2**

Professional training:

2. Deep-sea minerals and mining
 - Economical and ecological aspects

2.1 Introduction to multidisciplinary way of thinking
2.2 Introduction to system management/ analysis
2.3 Definition of subjects to be focussed on within the field of deep-sea minerals and mining
2.4 Characteristics of marine ecological systems
2.5 Effect of deep-sea mining on the marine and terrestrial ecosystem
2.6 Marine biology
2.7 Genesis of polymetallic nodules
2.8 International legal and regulatory framework for deep-sea minerals and mining

3. Intermediate seminar

Exchange of information end experiences of trainees/trainers/resource persons

4. The Ocean Ecosystem

4.1 Global Significance of the oceans for climate and nourishment
4.2 Physical oceanography
4.3 Chemical oceanography
4.4 Biological oceanography
4.5 Sedimentation

/...

5. Oceanic geology / geophysics

5.1 Structure and development of the ocean
5.2 Plate tectonics
5.3 The sedimentary regime and dating the history of the ocean

6. Deep-sea resources and their origin

6.1 Manganese nodules
6.2 Manganese crusts
6.3 Massive sulfides
6.4 Metalliferous sediments
6.5 Phosphorite nodules
6.6 Other resources

7. Exploration for resources

7.1 Exploration techniques
7.2 Explored resources
7.3 Unexplored resources
7.4 Excursion to one or more research ships

8. Mining in the deep sea

8.1 Mining techniques (first and second generation)
8.2 Prepilot mining tests
8.3 Pilot mining operations
8.4 Commercial mining

9. The oceanic environment under the influence of mining

9.1 Manganese nodules
9.2 Manganese crusts
9.3 Metalliferous muds
9.4 Other resources
9.5 Minimizing mining effects
9.6 Bottom impacts
9.7 Impacts on the bottom-near water layer
9.8 Impacts on the surface
9.9 Impacts on intermediate water layer

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10. Impact Research

10.1 Different types of required impact studies
10.2 Impacts of exploration
10.3 Impacts of research
10.4 Excursion(s) to visit institutions, where impact research is conducted incl. lectures and demonstrations.

11. Monitoring the effects of deep-sea minerals and mining

11.1 Basic philosophy of monitoring
11.2 The stable reference area (SRA)
11.3 Preservational reference areas
11.4 Impact reference areas (IRAs)

12. Resource processing

12.1 Maganese nodules
12.2 Metalliferous muds
12.3 Other resources (subchapter to cover different types of processes).

13. The terrestrial and the marine environment under the influence of processing and tailing storage.

13.1 Impact on the atmosphere
13.2 Impact on the terrestrial environment
13.3 Impact on the marine environment

14. Social impacts

14.1 Local impacts
14.2 Regional impacts
14.3 Global impacts

15. Final seminar

LOS/PCN/TP/1994/CRP.22
22 April 1994

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 1-12 August 1994

## NOTE VERBALE DATED 29 DECEMBER 1993 FROM THE PERMANENT MISSION OF FINLAND TO THE UNDER-SECRETARY-GENERAL FOR LEGAL AFFAIRS, THE LEGAL COUNSEL, OF THE UNITED NATIONS

The Permanent Mission of Finland presents its compliments to the Under-Secretary-General and has the honour to inform him that the Geological Survey of Finland has considerable experience in research of the sediments of the deep seabed in marine areas of a depth of under 200 metres. The Institute would wish to indicate its preparedness to provide training in the fields of its expertise. A copy of a recent letter from the Geological Survey is annexed for reference.

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## Annex

## THE GEOLOGICAL SURVEY OF FINLAND

The Geological Survey of Finland (GSF) has been actively engaged in marine geology both within the Baltic Sea and in other marine areas, since the late 1950s. Currently the main activity is centred on a marine geological survey of the Finnish exclusive economic zone, although work in polar marine areas is also being actively pursued. For both types of activities, including research and monitoring of the seabed environment, the Survey is well equipped with both expertise and research equipment. As far as equipment is concerned, GSF operates a 40-metre ferry-type research vessel for coastal work. The vessel is well equipped for heavy vibrohammer coring, seismo-acoustic profiling, on-board interpretation of data etc. A special-purpose water-jet powered survey launch is used in parallel for systematic detailed sea-floor surveys. Although direct deep-sea work has been limited to occasional participation in oceanic cruises by GSF personnel, much of the experience gained in continental shelf work can be easily projected to deep-sea areas as well.

During the 1970s, when the deep-sea nodules became a major international issue leading to the establishment of the Enterprise and the International Seabed Authority, GSF personnel was involved in the development of equipment for nodule "harvesting" as consultants to Finnish industrial enterprises. Owing to diminishing commercial interests in deep-sea nodules this activity has lost priority, although academic research in shallow-water ferromanganese concretions is still being actively pursued at GSF.

With regard to the environmental monitoring of the seabed, GSF has previously acquired considerable experience in geochemical mapping of land areas, and this experience is currently being extended into marine areas, both of national interest and in the future development of hydrocarbon reserves in the Arctic Ocean. GSF has been actively promoting environmental research in connection with aggregate (sand and gravel) extraction from the seabed in the Finnish exclusive economic zone. Furthermore, GSF has participated in the work of the International Council for the Exploration of the Sea (ICES) Working Group on the Effects of Aggregate Extraction on Fisheries.

Active participation in international conferences, workshops etc., together with close cooperation with marine scientists from other circum-Baltic countries, ensures a good knowledge of the state of the art.

(Signed) Boris WINTERHALTER
Senior Research Scientist

The Geological Survey of Finland
Department of Surface Geology
Marine Geology
Espoo, 15 December 1993

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LOS/PCN/TP/1994/CRP.24
21 July 1994

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 1-12 August 1994

# REPORT ON THE TRAINING OF THREE TRAINEES IN JAPAN

Submitted by the delegation of Japan

1. The three trainees selected by the General Committee of the Preparatory Commission on the recommendation of the Training Panel concluded their training in Japan as follows.

2. Mr. Pramuan Kohpina (Thailand), for the traineeship in geology, Mr. Eu-Dug Hwang (Republic of Korea), for the traineeship in geophysics, and Mr. Mahmoud Mohammad-Taheri (Islamic Republic of Iran), for the traineeship in electronic engineering, arrived in Japan on 17 May 1993.

## First phase

3. They went first to the Language Institute of the Japan International Cooperation Agency (JICA) in Tokyo and spent five weeks attending the intensive course in Japanese language which was preceded by a general orientation course of several days' duration.

## Second phase

4. They moved into Tsukuba, where the Geological Survey of Japan (GSJ) is situated, on 20 June. During the first two weeks of this phase, common lectures for them were given by the experts from GSJ, the National Institute for Resources and Environment and Deep Ocean Resources Development Co., Ltd. (DORD). The titles of the lectures were as follows: Marine geology; Marine geophysical survey; Geology of manganese nodules; Deep-sea mineral resources; Prospecting method of manganese nodules; Assessment of environmental impact of deep-sea mining; Metallurgical processing of manganese nodules; Marine geological survey; Japanese activity in prospecting marine mineral resources; Evaluation of manganese nodule deposits; Mining technology of manganese nodules; Sedimentology; and Japanese research activity in marine geology.

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best copy available

5. They spent 18 week in Tsukuba, mainly at GSJ, except for Mr. Mahmoud Mohammad-Taheri, who joined a R/V Hakurei-maru research cruise for 20 days.

6. After the above-mentioned serial lectures, Mr. Pramuan Kohpina received theoretical and practical training on petrography, mineralogy and geochemistry of manganese nodules; characteristics of deep-sea sediments; occurrence and genesis of manganese nodules; systematic methods for exploring nodules; and evaluation of nodule ore reserves. Mr. Eu-Dug Hwang received theoretical and practical training on planning of exploration; submarine topography; substrate profiles; relation between manganese nodule distribution and acoustic stratigraphy; computer processing of geophysical data; and interpretation of geophysical data. Mr. Mahmoud Mohammad-Taheri received practical training in the operation and maintenance of various acoustic instruments (12kHz PDR, 3.5kHz SBP and side-scan sonar), reflective seismic profiler, ship's positioning system (GPS etc.), shipboard gravimeter, proton magnetometer and Ocean Bottom Seismometer (OBS) during the R/V Hakurei-maru cruise. He received theoretical and practical training on seismic prospecting; echo sounding; and positioning.

## Third phase

7. The three trainees flew to Hawaii on 23 October to join a research cruise on the R/V Hakurei-maru No. 2 for six weeks and came back to Tsukuba on 2 December 1993. During the cruise they received theoretical and practical training on various subjects corresponding to each discipline. The training items were planning of exploration cruise; sampling of nodules and sediments; analysis of bottom photographs; on-board chemical analysis of nodules; calculation of exact position of tow fish; data processing of nodule data; and calculation of ore reserves for the discipline of geology; sampling equipment and treatment; acoustic survey method and instruments; sea-bottom observation; positioning; data recording and processing; and planning of exploration for the discipline of geophysics; bottom sampling method with free-fall grab; spade corer etc.; abundance and coverage estimation of manganese nodules with the Multi-frequency Exploration System (MFES); operation of underwater camera (CDC); topographic mapping technology by Multi-beam Echo Sounder (MBES); positioning and navigation of the vessel; and data processing, for the discipline of electronic engineering.

## Fourth phase

8. They spent 12 weeks mostly in Tsukuba, at GSJ, during this final phase (3 December 1993-27 February 1994). They spent the month of December proceeding with further studies on the samples and data which they had obtained during the R/V Hakurei-maru No. 2 cruise and drafted a report on the same cruise.

9. During January and February, they wrote a tentative instruction manual for a survey of manganese nodule deposits under the title, "Geology and prospecting of manganese nodules", as the comprehensive report of their experience and study of manganese nodules. The report consists of six chapters: 1. Positioning and navigation of survey vessel; 2. Sea-bottom observation; 3. Geophysics; 4. Design of nodule prospecting; 5. Geology of manganese nodules; 6. Geological

prospecting of manganese nodules. It is 113 pages in length and contains 59 figures and 14 tables.

10. After completing their official report to the Preparatory Commission and receiving the certificates issued by JICA and DORD, they returned to their countries at the end of February 1994.

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LOS/PCN/TP/1994/CRP.25
21 July 1994

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 1-12 August 1994

# REPORTS ON THE TRAINING RECEIVED UNDER THE TRAINING PROGRAMME OF JAPAN

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II. Report of Mr. Eu-Dug Hwang (Republic of Korea), trainee in geophysics ........ 189

III. Report of Mr. Mahmoud Mohammad-Taheri (Islamic Republic of Iran), trainee in electronic engineering ........ 193

## I. REPORT OF MR. PRAMUAN KOHPINA (THAILAND), TRAINEE IN GEOLOGY

Training course: "Deep seabed mineral resources development", at the Geological Survey of Japan and on board the research vessel Hakurei Maru No. 2.

Duration: 17 May 1993-27 February 1994.

### Training programmes

In this discipline, the trainee is expected to acquire knowledge and techniques to carry out:

(a) Analysis and summarization of geological data at the site reserved for the Authority;

(b) Establishment and management of a geological database;

(c) Supervision or monitoring of exploration activities at a site reserved for the Authority;

(d) Selection of an area for mining.

### First phase: 17 May-19 June 1993

Japanese language course at the Language Institute of the Japan International Cooperation Agency at Hatagaya-Tokyo.

The trainees attended the "Intensive Course in Japanese Language", studying Monday to Friday, five hours per day for four weeks, totalling 95 hours. The contents of the course involved conversational practice of simple spoken Japanese language necessary for routine living in Japan, such as shopping in a department store, dining in a restaurant, travelling on a train and conversation with Japanese-speaking people.

### Second phase: 22 June-23 October 1993

Theoretical and practical training at the Geological Survey of Japan.

| Training programmes | Result |
|---|---|
| 1. Petrography, mineralogy and geochemistry of nodules | Successful |
| 2. Characteristics of deep-sea sediments | Successful |
| 3. Occurrence and genesis of nodules | Successful |
| 4. Systematic methods for exploring nodules | Successful |
| 5. Evaluation of nodule ore reserves | Successful |

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## Activities

### 1. Lectures on various subjects of manganese nodule deposits

Common lectures for all trainees for 10 days in two weeks, given by experienced geologists, geophysicists, and engineers from GSJ, DORD, and NIRE. Subjects were marine geology, marine geological survey, marine geophysical survey, geology of manganese nodules, deep-sea mineral resources, prospecting methods of nodules, assessment of environmental impact of deep-sea mining, refining method of nodules, Japanese activity in prospecting marine mineral resources, evaluation of nodule deposits, mining technology of nodules, Japanese research activity in marine geology.

### 2. Evaluation of ore reserves: report, 35 pages

Exercise on evaluation of nodule ore reserves in the Central Pacific Basin using data collected by the Geological Survey of Japan. Data, including 555 nodule abundance collected from 178 sampling stations, were analysed for economic potential of manganese nodule deposits. The results revealed five potential economic areas covering a total area of about 660,000 sq km with a total nodule reserve of about 9,000 million metric tonnes. Writing of the report, entitled "Estimation of manganese nodule reserves of an area in the northern part of the Central Pacific Basin".

### 3. Nodules from cruise NH93; laboratory exercises

Exercise on manganese nodule and sediment samples of cruise NH93 from the Northern Pacific. Experience of laboratory work on morphology, internal structure and mineralogy of manganese nodules, including views of nodules under an electron microscope.

## Third phase: 24 October-2 December 1993

Training programme on board the research vessel Hakurei Maru No. 2.

| Training programmes | Result |
|---|---|
| 1. Planning of exploration cruise | Successful |
| 2. Sampling of nodules and sediments | Successful |
| 3. Operation and analysis of bottom photos | Successful |
| 4. On-board chemical analysis of nodules | Successful |
| 5. Calculation of exact position of tow fish | Successful |
| 6. Data processing of nodule data | Successful |
| 7. Calculation of ore reserves | Successful |

/...

Activities

1. Lectures

Attended lectures on the above subjects by the DORD members.

2. Exploration exercise

Observed and obtained practical training in the above subjects with the members of DORD in the Clarion-Clipperton zone of the Pacific Ocean for about six weeks. Exploration activities included bottom sampling, bottom-photographs operations, on-board chemical analysis and geophysical survey.

Fourth phase: 3 December 1993-27 February 1994

Continued theoretical and practical training at the Geological Survey of Japan.

| Scheduled programmes | Result |
|---|---|
| Research on selected subjects | Successful |

Activities

1. Cruise report, 70 pages

Analysis and compilation of the data collected on board the Hakurei Maru No. 2 and writing an exercise cruise report. The data included topography of the sea floor, distribution of nodule abundance from acoustic signals (MFES), sub-bottom sediment profiles, morphology and occurrence of nodules, nodule and metal reserves and mineralogy of nodules and sediments.

2. Instruction manual of manganese nodules prospecting: report, 113 pages

Writing an instruction manual entitled "Geology and prospecting of manganese nodules", with the other two trainees, comprising three parts, each part was written by one trainee. The report is a summary of knowledge of manganese nodules obtained from the entire training, including the on-board training, to form a tentative instruction manual for a survey of manganese nodule resources in the areas reserved for the International Seabed Authority in the Clarion-Clipperton zone, which is the ultimate purpose of this training course.

## II. REPORT OF MR. EU-DUG HWANG (REPUBLIC OF KOREA), TRAINEE IN GEOPHYSICS

I attended the training course on the deep-seabed mineral resources exploration offered by Japan as a pioneer investor country under the United Nations Convention on the Law of the Sea.

The training programmes were divided into the following four phases:

1. General introduction (17 May-20 June 1993, 5 weeks in Tokyo): orientation and Japanese language course.

2. Theoretical and practical training (21 June-20 October 1993, 17 weeks in Geological Survey of Japan (GSJ)) 1/

2.1 Lecture

- Marine geology and Manganese nodules, Dr. Nakao and Dr. Okuda (GSJ);
- Marine geophysical survey, Dr. Ishihara (GSJ);
- Assessment of environmental impact of deep-sea mining, Dr. Nakata (NIRE);
- Refining method of manganese nodules, Dr. Saito (NIRE); 2/
- Japanese activity in prospecting marine mineral resources and evaluation of manganese nodule deposits, Mr. Fujioka (DORD); 2/
- Mining technology of manganese nodules, Dr. Yamazaki (NIRE);
- Japanese research activity in marine geology and sedimentology, Dr. Nakao (GSJ).

2.2 Theoretical study

GSJ supplied many cruise reports which involved marine geology, geophysics and manganese nodules deposits in the southern part of the Central Pacific Basin carried out by GSJ from 1976 to 1982. GSJ prepared many books, computer data and samples for us. I studied the systematic methods for manganese nodule exploration by using these cruise reports and many other books.

(1) Planning of exploration (target, schedule and method);

(2) Acoustic exploration method and evaluation of exploration programme:

- Submarine topography;
- Substrate profiles;
- Relation between manganese nodule distribution and acoustic stratigraphy;

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- Computer processing of geophysical data (Dr. Ishihara taught to us how to make topography maps, magnetic anomaly maps and gravity anomalies maps);

- Interpretation of geophysical data.

2.3 Study trip (13 October: 17.5 days)

(1) Japanese activity on deep-sea research: Japan Marine Science and Technology Center (JAMSTEC); 3/

(2) Geochemistry of deep-sea sediments (Kyoto University of Education);

(3) Volcanogenic mineralization connected with submarine hydrothermal deposits (Volcano Research Institution belongs to Kyoto University).

### 3. On-board training (six weeks)

3.1 Outline of the DORD 93-5 Cruise

(1) Duration: 24 October-30 November (38 days)

(2) Rough summary of cruise:

| | |
|---|---|
| 24-26 October | Preparation for cruising |
| 27 October, 1500 | Depart Honolulu |
| 31 October, 0300 | Arrive at the survey area, recovered current meter and Geological (sampling) and geophysical survey |
| 26 November, 1400 | Finished acoustic surveying and departed |
| 30 November, 0800 | Arrived in Honolulu |

3.2 Purpose of the training course on the ship

(1) To get experience and to learn the methods of exploration of manganese nodules, as a trainee under the United Nations Convention on the Law of the Sea;

(2) A geophysicist has to learn the following exploration methods:

- Planning of exploration;

- Acoustic methods of nodule exploration for such purposes as drawing a topographic map, inferring sub-bottom structure, estimating nodule abundance and drawing a sound-pressure map;

- Computer processing and filtering of acoustic data;

- Positioning technique;

/...

- Measurement of physical properties of water by the conductivity temperature depth (CTD) system.

### 3.3 Training programmes

(1) General introduction: the purpose of cruising, activities of DORD, introduction to Hakurai Maru No. 2 and equipment (Chief Scientist: Mr. Fujioka; Captain: Mr. Endo;

(2) Sampling methods: sampling equipment and treatment (Chief Geologist: Mr. Kuriyama);

(3) Acoustic surveying methods: explanation of different acoustic surveying equipment (PDR, SBP, NBS, MBES, MFES, SSS, CTD) and theory (Chief Geophysicists: Mr. Maeda and Mr. Saito);

(4) Sea-bottom observation: Free-fall camera and continuous deep-sea camera (Ku.);

(5) Positioning: GPS and NNSS (Ma. and officer);

(6) Data recording and processing: On-line and off-line functions (ma. and Chief Computer Engineer: Mr. Murayama);

(7) Planning of exploration: planning and procedure for training area (Fu, Ku and Ma.).

### 3.4 Survey in the training area

DORD gave us two days to carry out the exploration by ourselves. We learned many things through the DORD 93-5 cruise.

## 4. Final stage (13 weeks)

At the end of the training period, I studied 4/ acoustic exploration methods and design of manganese nodule surveying. I made a final report.

## 5. Conclusion and impressions

The major considerations concerning the economic factors of deep-sea manganese nodules are metal content, coverage and size range of nodules, continuity of the deposits sea-floor topography and character of the associated sediments.

I have learned many things concerning surveying manganese nodules through this training course and cruising:

(1) Planning of cruises for acoustic surveys;

(2) Acoustic surveys (NBS, PDR, SBP, MFES and MBES);

(3) Data-processing;

(4) Positioning (GPS, NNSS, Loran-C).

It has indeed been a great pleasure for me to join this training course GSJ and Hakurai Maru No. 2 were equipped with all instruments necessary to study the important factors of manganese nodules. The scientists of GSJ and DORD have a great deal of experience and knowledge in the field of exploration.

I wish to thank the Director of Marine Geology, Dr. Nakao and Dr. Usui and the other scientists in GSJ and the crew members of Hakurei Maru No. 2 and all the members of DORD.

## Notes

1/ The Geological Survey of Japan (GSJ) belongs to the Agency of Industrial Science and Technology (AIST) of the Ministry of International Trade and Industry (MITI). GSJ is equipped with one of the best facilities and is staffed with first-class researchers in the field of earth science in Japan.

2/ NIRE: National Institute for Resources and Environment.
DORD: Deep Ocean Resources Development Co., Ltd.

3/ JAMSTEC is one of the semi-governmental organizations under the Science and Technology Agency. It owns surface research vessels, the Natsushima, Yokosuka and Kaiyo, and submersible research vessels, the Shinkai 2000 and Shinkai 6500. JAMSTEC has developed an unmanned submersible vehicle which is suitable for deep-sea exploration.

4/ Study trip (12-15 January, four days): visited the Hydrographic Office and Yamagata University. (The Hydrographic Office publishes various hydrographic charts and publication such as nautical charts and sailing directions containing various kinds of information necessary for safe navigation at sea.)

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## III. REPORT OF MR. MAHMOUD MOHAMMAD-TAHERI (ISLAMIC REPUBLIC OF IRAN), TRAINEE IN ELECTRONIC ENGINEERING

### Introduction

1. Intensive research activities during the past 20 years have revealed certain new deep-sea, mineral resources such as ferromanganese deep-sea nodules, covering the relatively flat surface of the deep seabed at a depth of 4,000 m to 6,000 m, cobalt-rich ferromanganese crusts as well as polymetallic massive sulphide (PMS) deposits.

2. Manganese nodules are distributed over wide areas as two-dimensional deposits containing more than 30 kinds of useful metals such as manganese, nickel, copper and cobalt. It has been confirmed that the above-mentioned metals are several times as much as the total volume of land resources, which is equivalent to tens of thousands years' consumption the world over. Therefore a great attempt is being made to explore these huge resources.

3. Concerning the above fact, the United Nations has established an organization called "Law of sea" attempting to train a number of participants in order to explore the above-mentioned resources from the international (high-sea) water. Japan as a pioneer-investor country in this area has accepted three trainees in agreement with the United Nations for "deep-seabed mineral resources exploration" course whose details will be given in the following sections.

### Training

4. The training was carried out between 17 May 1993 and 27 February 1994 and contained four phases, as follows:

5. First phase. A general orientation, including the Japanese language course, was carried out at the Tokyo International Centre, Hatagaya from 24 May to 19 June 1993. During this period, enough understanding of the Japanese language was obtained in order to help us to adapt to living in Japan.

6. Second phase. The theoretical course started on 21 June 1993 at the Geological Survey of Japan (GSJ). The content of the course was Marine geology by Dr. Okuda, GSJ; Marine geological survey; Geology of manganese nodules; Sedimentology; Japanese research activity in marine geology, and Prospecting methods of manganese nodules by Dr. Nakao, GSJ; Marine geophysical survey by Dr. Ishihara, GSJ; Assessment of environmental impact of deep-sea mining, Dr. Nakata, NIRE; Refining methods of manganese nodules, by Mr. Saito, NIRE; Japanese activity in prospecting marine mineral resources, and Evaluation of manganese nodule deposits, by Mr. Fujioka, DORD; and Mining technology of manganese nodules by Dr. Yamazaki, NIRE.

7. The practical part of this phase was carried out in R/V Hakurei Maru No. 1 in the Sea of Japan from 11 to 30 July 1993. The purpose of this training was to gain familiarity with equipment and facilities of vessels and seismic experiment at Sea. Below is a brief description of facilities in R/V Hakurei Mara No. 1.

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Laboratory No. 1

8. Seismic reflection, sonar and magnetic methods are controlled in this laboratory. During seismic survey, the ship tows two air guns as well as a single-channel streamer, or "ell". The air guns, being non-explosive pneumatic sound sources, fire simultaneously every six seconds, transmitting acoustic energy to the sea floor. Some of this energy penetrates the sea floor, reflects off boundaries within underlying rocks and is then transmitted back to the streamer. The streamer consists of several transducers that converted the acoustic signal into an electrical signal, which is then recorded in the ship. There are three methods of recording the seismic signal on board, namely paper record, analog tape and digital system using different-band pass filters.

9. Two other seismic reflection systems are operated continuously at frequencies of 12 kHz and 3.5 kHz. The 12 kHz precision depth recorder (PDR) is primarily used to provide accurate bathymetry. The 3.5 kHz sub-bottom profiler (SBP) details the uppermost sedimentary structure and is especially important for sampling work. They are both mounted on the hull of the ship.

10. A side-scan sonar (SSS) system is also used. This system consists of a platform called a "fish", towed only 100-200 metres above the sea floor, sending acoustic energy of 59 kHz, and can record the reflected acoustic signal of the sea floor not only underneath the fish but also from 500 m to either side of it.

11. Besides these systems, laboratory No. 1 also controls the magnetic field measuring equipment of a three-component flux-gate magnetometer as well as a total-field proton magnetometer towed as a pair 600 m behind the ship during the seismic survey work.

Laboratory No. 3

12. Sediment and water sampling methods and analyses are performed in this laboratory. Two primary acquisition methods are employed, namely, grab sampling and gravity coring. The recovered samples are analysed using several different techniques.

Laboratory No. 5

13. This laboratory contains the gravimeter and serves as the primary area for recording and processing of navigation and geophysical data. GPS, Loran-C and NNSS are three navigation systems used on board. A Lacostle-Romberg shipboard gravimeter is used to continuously measure the observed gravitational acceleration of the earth. This laboratory also functions as the data recording and processing centre.

14. An ocean bottom seismometer (OBS) was also currently used in this cruise. The system consists of three geophones detecting three components of seismic S-wave earthquake (two vertical and one horizontal components) and one hydrophone which detects P-wave earthquake signals.

15. Third phase. In the third phase, practical training was carried out on board R/V Hakurei Maru No. 2 by DORD at Clarion-Clipperton zone of the Pacific

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Ocean from 23 October to 30 November 1993. The training started by gaining familiarity with prospecting and exploration devices. These devices can be categorized as follows: (1) geological exploration devices; (2) geophysical exploration devices; (3) sea-bottom observation devices; (4) navigation positioning systems; (5) auxiliary devices.

## 1. Geological exploration devices

16. These devices are various bottom sampling devices such as free-fall grab (FFG) consisting of a float, grab, steel camera and ballast which falls into water with its own weight, spade corer (SC) consisting of a 50 cm x 50 cm x 50 cm sampling box which is lowered into the sea by a winch and penetrates into the sediment; a dredge bucket (DB) which consists of a cage-type dredge bucket and a 500-kg ballast weight. The penetration of the sampling net is confirmed by the direct and reflected signal from the attached pinger.

## 2. Geophysical exploration devices

17. Geophysical exploration of the sea bottom and sub-bottom is made from reflected sound pressure. The devices which are used for the geophysical study of the sea floor are as follows: a narrow beam sounder (NBS), which makes a very narrow half-width angle of 92.6 degrees at 30 kHz using a large surface transducer to increase topographical resolution, providing topographical and sea-bottom profile of deep waters; a multi-frequency exploration system (MFES) which measures sound pressure at 30 kHz (from NBS), 12 kHz (from PDR) and 3.5 kHz (from SBP) and uses their composite sound pressure to prospect abundance and diameter of manganese nodules on the sea floor on a real-time and continuous basis. The Multi-Beam Echo Sounder (MBES) which is a swath bathymetry system used to display and record topographical structures of the sea bottom in the form of coloured bottom maps, cross-profiles and iso-lines in real time.

## 3. Sea-bottom observation devices

18. These devices are: sampler-mounted still camera, which is mounted on the free-fall grab, spade corer and other sampler to photograph the sea-bottom immediately before sampling; continuous deep-sea camera (CDC), which provides a series of photographs on the sea floor as a visual survey method for manganese nodules; and finder-attached deep-sea camera (FDC), which is an advanced development of sea floor photography using optical images. Instead of single shots, the TV system transmits continuously a coherent strip of the sea floor.

## 4. Navigation position system

19. The method of determining the ship location falls into two broad categories: the traditional Earth-based radiolocation methods and relatively recent method of positioning by satellite. In the first method, the position of a point is determined by nearly simultaneous measurements of radio signals from several fixed transmitters. In the satellite method, the position of an observer relative to the satellite can be determined by monitoring the time of travel (in the GPS system) or frequency shift (in the NNSS system) of electromagnetic signals emitted from the satellite to the observer.

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## 5. Auxiliary equipment

20. These devices are used for measuring different characteristics of sea water, processing of data and chemical analysis of nodule samples. This equipment is as follows: Fluorescent X-ray analyser for analysing the composition of manganese samples; conductivity, temperature and depth (CTD) measuring system to measure variations of water velocity versus depth by measuring the variations of conductivity and temperature against water depth; computer system for analysing and processing the data.

### On-board practice

21. Free-fall grab and spade-core samplers were used during sampling operation and the calculated abundance and coverage of manganese nodules was compared with data obtained by MFES during the acoustic survey. Also to measure variations of conductivity and temperature of water versus depth, a CTD was attached to SC. The measured conductivity and temperature are then used for the calculation of sound velocity in water.

22. Fourth phase. In the fourth phase, the data obtained in the third phase were analysed, based on the activities carried out in R/V Hakurei Maru No. 2, and also the second phase. The relevant report corresponding to our subjects was provided.

## Conclusion

23. A 41-week "deep-seabed mineral resources exploration" training course sponsored by the Japan International Cooperation Agency (JICA) under an agreement with the United Nations was carried out in Japan from 17 May 1993 to 27 February 1994. Training started with a four-week intensive Japanese-language course in Tokyo. The main course began on 21 June 1993 at the Geological Survey of Japan (GSJ), including two weeks of geology and geophysics lectures and three weeks of training on the R/V Hakurei Maru No. 1 in the Sea of Japan. During the training on the vessel, various experiments such as seismic exploration, sampling and ocean-bottom seismometry (OBS) and echo sounding were carried out and detail information about the sea bottom and sub-bottom were obtained. Between 2 August 1993 and 23 October 1993, individual studies on seismic prospecting, echo sounding and positioning were carried out at GSJ. From 23 October 1993 training started on R/V Hakurei Maru No. 2 and ended on 2 December 1993.

24. During 40-days survey carried out with Hakurei Maru No. 2 in Clarion-Clipperton Zone of Pacific Ocean, various sampling devices such as dredge-bucket, spade corer and free-fall grab were used to determine the metal contents, abundance and coverage of manganese nodule at a water depth of more than 5,000 m. Using MFES data, abundance and coverage of nodules were also computed during the acoustic survey. Topographic and bathymetric contour maps were also produced by MBES and SBP data during the cruise. The comparison between MFES and sampling data showed that the calculated values of manganese nodule abundance and coverage can be used to correct the MFES data if a sufficient number of samples are taken in the area.

25. In this cruise, the use of various acoustic and sampling devices was taught and a good knowledge of these devices and methods of operation was obtained. I would like to thank Dr. Seizo Nakao for his supervision and concern throughout the period of the training. I would also like to express my appreciation to all the members of the DORD and GSJ staffs for their concern and assistance during the period of the two surveys.

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LOS/PCN/TP/1994/CRP.26
25 July 1994
ENGLISH
ORIGINAL: FRENCH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL TRIBUNAL
FOR THE LAW OF THE SEA
New York
1-12 August 1994

# REPORT ON TRAINING OF THREE FELLOWS IN FRANCE

(Submitted by the French delegation)

## 1. Mr. Ahmed Braham (Tunisia)

(Training period from 8 November 1992 to 15 September 1993)

(a) Mr. Braham's report has now been edited. A copy has been submitted to the training group. The report comprises three parts:

- Part 1: Training at the Mineral Resources Exploration and Recovery Advanced Training Centre (CESEV) at Nancy, with, as an annex, a report on a training period at the Office for Geological and Mining Research from 3-28 May 1993 on the French subsoil database;
- Part 2: Description of equipment and methods used in exploration for polymetallic nodules by IFREMER/AFERNOD;
- Part 3: A personal project on evaluation by geostatic means of polymetallic nodule resources in the Clarion/Clipperton zone on the basis of information in the IFREMER/AFERNOD database.

(b) Training period at sea: During this period, Mr. Braham was to take part in a one-week oceanographic survey in the Channel, using the IFREMER "rapid seismic" system and its system of layer and core sampling. Mr. Braham was not able to board owing to bad weather conditions, which made onboard work impossible. Since IFREMER oceanographic vessels are programmed several months in advance, it was not possible to move Mr. Braham to another survey voyage employing mineral resources exploration methods and equipment.

2. Mr. Kaiser De Souza (Brazil)

(Training period from 1 October 1993 to 30 September 1994)

Mr. Kaiser De Souza completed his training in mining geology at the Mineral Resources Exploration and Recovery Advanced Training Centre (CESEV) at Nancy. He was accepted, effective 5 April 1995, at the IFREMER Department of Marine Geology, where he prepared a synthesis of the French nodules project (geology of ocean basins, exploration methods and techniques, feasibility of exploitation of polymetallic nodules).

From 28 July to 24 August 1994 Mr. De Souza is to participate in the ZoNéCo survey on board the oceanographic vessel *L'Atalante*. The survey is part of the national programme for the exploration of the seabed in the French exclusive economic zone.

The objective of the ZoNéCo programme is to map, using a multibeam sounder, a sector of the New Caledonia EEZ with the aim of evaluating marine resources (mineral and fishery). A first survey (ZoNéCo 1) took place in June/July 1993 and resulted in detailed mapping of a sector located approximately between 23°20 and 25°40 south and 167°20 and 171° east.

3. Mr. Mamadou N'Diaye (Senegal)

(Training period from 1 October 1993 to 30 September 1994)

Mr. Mamadou N'Diaye completed his training in geophysics and data processing at the National College of Petroleum and Motors (ENSPM) at Rueil-Malmaison. He entered the IFREMER Department of Marine Geology on 28 February 1994 to complete his training in geophysical methods used in exploration for marine resources, and, in particular, methods and technologies employed by France to develop polymetallic nodule deposits.

In addition Mr. N'Diaye has prepared a personal project on the evaluation of the mineral resources of the continental shelf of Senegal, identifying potential geological deposit target areas.

In common with Mr. De Souza he is to take part, from 28 July to 24 August 1994, in the ZoNéCo 2 oceanographic survey on board the *L'Atalante* in New Caledonia.

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LOS/PCN/TP/1994/CRP.27
2 August 1994

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 1-12 August 1994

# REPORT ON THE TRAINING OF TWO TRAINEES IN INDIA

Submitted by the delegation of India

1. Pursuant to the Understanding on the Fulfilment of Obligations by Registered Pioneer Investors and their Certifying States (LOS/PCN/L.87, annex) and on the recommendations of the Training Panel, the Preparatory Commission designated Mr. Khalid Abdullah Kadi (Saudi Arabia) for traineeship in mining geology and Mr. Kwame Odame Boamah (Ghana) for the traineeship in exploration geophysics under the training programme offered by India. The training commenced in October 1993. After successful completion of the training programme Mr. Kadi and Mr. Boamah presented the attached reports* to the Department of Ocean Development in the last week of July 1994. The Department of Ocean Development will be shortly issuing appropriate certificates regarding the completion of the training programme.

2. At its 5th meeting, the Training Panel selected Mr. Saad M. Ielea (Iraq) for the traineeship in chemical engineering. Mr. Ielea has communicated his acceptance and the training programme is expected to commence during October 1994. Necessary arrangements in this regard are being made by the Department of Ocean Development.

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* The reports have been transmitted to the Secretariat.

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LOS/PCN/TP/1994/CRP.28
2 August 1994
ENGLISH
ORIGINAL: CHINESE

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 1-12 August 1994

22 July 1994

# THE CHINA TRAINING PROGRAMME: A PROGRESS REPORT FROM THE CHINESE DELEGATION

1. In accordance with the Chinese Personnel Training Programme approved by the Preparatory Commission, the following persons arrived in China in mid-May 1994 to receive training in their respective fields: Mr. Mourad Kelkal of Algeria (marine geology), Mr. Ibrahim Sarour Balla of Sudan (marine geophysics), Ms. Natalya Chigrinova of Belarus (metallurgical engineering), and Mr. Kyung-soo Choi of the Republic of Korea.

2. The first phase of training is in progress at the Qingdao Marine University, and the following has been accomplished to date:

(1) Chinese-language training at the University's Language Instruction Centre: concentrated Chinese-language training has now been completed, and further Chinese-language instruction will be provided at the conclusion of the first phase of training in order to solidify and improve the trainees' abilities in the Chinese language.

(2) Courses in basic marine environment theory, emphasizing the oceanic environment, are currently in progress. The content of these courses includes physical oceanography, marine geology, marine chemistry and marine biology.

(3) A one-week at-sea practice session is about to be organized, to allow the trainees to familiarize themselves with the marine environment and with the instruments and equipment aboard the research vessel(s).

3. At the group's 5th meeting, the Chinese members of the Preparatory Commission's training specialists group expressed their views on adjusting the postponement of the China Training Programme. The Chinese scientific research vessels "Xiangyanghong no. 9" and "Haiyang no. 4" are currently carrying out exploration activities in the development zone. In order to provide the trainees practical training aboard scientific research vessels as well as experience of actual operations through participation in the China Ocean Association's exploration work in the development zone, the trainees will board the vessel(s) in Hawaii in mid-August following the conclusion of the first phase of their training, and take part in a six-week practical training session in the development zone.

4. The Chinese delegation would like to take this opportunity to express its thanks to the countries concerned for the high calibre of trainees they have provided, and to the members of the Preparatory Commission's specialists' group for having made the final selection of candidates for the Programme. It also fully affirms the enthusiasm and cooperative spirit of the trainees taking part in the China Training Programme.

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LOS/PCN/TP/1994/CRP.29
3 August 1994
ENGLISH
ORIGINAL: RUSSIAN

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
1-12 August 1994

# REPORT ON TRAINING OF THREE TRAINEES IN THE RUSSIAN FEDERATION

(Submitted by the delegation of the Russian Federation)

1. Mr. Munyao (Kenya) should have arrived for training on 1 October 1993. However, no confirmation of his consent to participate in the training was received from him in response to the notifications of the dates and conditions of the training sent to him from the Russian Federation. Since the deadline for the commencement of training for the selected participants was past, the Russian Federation did not consider it possible to postpone the dates of the training for the other candidates, who had arrived at the time specified, and considers that its obligations with respect to the training of Mr. Munyao have been discharged. The Preparatory Commission has been notified to this effect.

2. Mr. Samir Mutwalli (Saudi Arabia) arrived in the Russian Federation in October 1993 and began his training in marine geoecology at the International Scientific Instruction Centre of the Yuzhmorgeologiya scientific and production association of the Committee of the Russian Federation on Geology and Use of Mineral Resources (ROSKOMNEDRA), the address of which is Ul. Krasnogvardeiskaya 79, Gelendzhik 353470, Krasnodar District, Russian Federation.

3. The basic course of study included theoretical lectures and practical assignments in the following scientific and production disciplines:

- Spoken Russian;
- Practical marine geology: introduction;

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- Principles of organization of geoecological monitoring;
- Methods of marine and laboratory geoecological studies;
- Modern sedimentogenesis and its role in the state of ecosystems;
- Hydrodynamic, hydrophysical and hydrochemical parameters of ocean water masses;
- Equipment for marine and laboratory geoecological studies;
- Natural and technology-derived factors influencing the state of geoecosystems;
- Full-scale experiments to assess the environmental consequences of industrial processing of seabed resources.

4. As a supplement to the study programme Mr. Mutwalli was given a briefing on aspects of the technology used by the Yuzhmorgeologiya scientific and production association State enterprise in the following fields of geological prospecting activity:

- Planning of marine geological prospecting work;
- Geological and economic assessment of ferromanganese nodule deposits.

5. On completion of the theoretical course of study the Special Commission established, on the basis of an interview with Mr. Mutwalli, that he had fully mastered the scientific and theoretical disciplines in which he was instructed during the training course and was able to work independently in the field of specialization selected by him, "Marine geoecology".

6. In June-July 1994 Mr. Mutwalli participated in an expedition on board the "Yuzhmorgeologiya" research vessel in the Pacific Ocean under the joint Russian-United States "Benthic Impact Experiment" (BIE), for the purpose of carrying out the practical phase of the training.

7. On the basis of the results of the interview, Mr. Samir Mutwalli was awarded a special Certificate of the Russian Federation certifying successful completion of the training process, and the relevant report on the completion of the theoretical and practical training courses was drawn up.

8. Mr. Samir Mutwalli has thus completed a full course of training under the Preparatory Commission's programme, has demonstrated his high professional abilities, and is recommended for employment in the International Seabed Authority.

9. Mr. Juan Lorenzo Díaz Naveas (Chile) arrived in the Russian Federation in October 1993 and began his training in marine geophysics at the International Scientific Instruction Centre of the Yuzhmorgeologiya scientific and production association of ROSKOMNEDRA.

10. The basic course of study included theoretical lectures and practical assignments in the following scientific and production disciplines:

- Russian language;
- Practical marine geology: introduction;
- Theoretical foundations of methods of marine geophysics;
- Geophysical equipment for marine geological prospecting work;
- Technical equipment for geophysical methods of prospecting the oceans;
- Processing and interpretation of geophysical information.

11. As a supplement to the study programme Mr. Díaz Naveas was given a briefing on aspects of the technology used by the Yuzhmorgeologiya scientific and production association State enterprise in the following fields of geological prospecting activity:

- Planning of marine geological prospecting work;
- Geological and economic assessment of ferromanganese nodule deposits.

12. On completion of the theoretical course of study the Special Commission established, on the basis of an interview with Mr. Díaz Naveas, that he had fully mastered the scientific and theoretical disciplines in which he was instructed during the training course and was able to work independently in the field of specialization selected by him, "Marine geophysics".

13. In June 1994 Mr. Juan Díaz Naveas participated in an expedition on board the "Gelendzhik" research vessel in the Mediterranean Sea under the TREDMAR International Programme of the United Nations Educational, Scientific and Cultural Organization (UNESCO) for the purpose of carrying out the practical phase of the training.

14. On the basis of the results of the interview, Mr. Juan Díaz Naveas (Chile) was awarded a special Certificate of the Russian Federation certifying successful completion of the training process, and the relevant report on the completion of the theoretical training courses was drawn up.

15. Mr. Juan Díaz Naveas has thus completed a full course of training under the Preparatory Commission's programme, has demonstrated his high professional abilities, and is recommended for employment in the International Seabed Authority.

16. During the theoretical training Mr. Samir Mutwalli and Mr. Juan Díaz Naveas visited Moscow, where they were interviewed about the results of their training in the Department of Continental Shelf and Sea/Ocean Mineral Resources of ROSKOMNEDRA. During the interview they were informed about the activities of ROSKOMNEDRA in the field of marine research.

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17. While in Moscow, Mr. Samir Mutwalli and Mr. Juan Díaz Naveas also visited the M. V. Lomonosov Moscow State University (MGU), where they were informed about the activity of the faculties in the field of ocean studies and visited an exhibition at the geological museum.

18. The lectures were given and the practical studies conducted by highly qualified experts from the Yuzhmorgeologiya scientific and production association. The trainees studied a number of theoretical disciplines in marine geology in a presentation by specially invited leading scientists of the Russian Federation from MGU and the P. P. Shirshov Institute of Oceanology of the Russian Academy of Sciences.

LOS/PCN/TP/1994/CRP.30
3 August 1994

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 1-12 August 1994

# INFORMATION SUBMITTED TO THE TWELFTH SUMMER MEETING OF THE PREPARATORY COMMISSION BY THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

## I. DECISION OF THE EXECUTIVE COUNCIL OF THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

1. In view of the imminent entry into force of the United Nations Convention on the Law of the Sea, the Executive Council of the Intergovernmental Oceanographic Commission (IOC), at its twenty-seventh session, held at Paris from 5 to 13 July 1994, devoted a separate agenda item to discussing "IOC and the United Nations Convention on the Law of the Sea: responsibilities and actions". 1/ Among other things, the Executive Council stressed the importance of its cooperation with other international organizations and bodies, including the International Hydrographic Organization, the International Maritime Organization, the United Nations and the International Seabed Authority in discharging its responsibilities under the Convention. The Executive Council also decided to establish an ad hoc Inter-sessional Working Group on IOC Responsibilities and Actions in relation to the United Nations Convention on the Law of the Sea to identify and recommend future actions to be taken by IOC.

2. As a competent international organization designated by the Law of the Sea Convention in marine scientific research, IOC welcomes the latest encouraging developments in the field of the law of the sea, particularly in relation to the International Seabed Authority, and would be very happy to cooperate with the Authority when it is formally established. There is a broad prospect for cooperation between IOC and the International Seabed Authority, including its organs and the Enterprise.

/...

## II. LEGAL COMPETENCE OF THE COMMISSION UNDER THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA IN RELATION TO THE INTERNATIONAL SEABED AUTHORITY

3. IOC's responsibilities as a competent international organization under the Convention on the Law of the Sea in the international seabed area include:

(a) Promotion of cooperation in marine scientific research by ensuring that programmes are developed through the Authority or other international organizations as appropriate (article 143 (3) (b));

(b) Dissemination of the results of research and analysis when available, through the Authority or other international channels when appropriate (article 143 (3) (c));

(c) Provision, on request, of advice to the Economic Planning Commission and the Legal and Technical Commission in fields where IOC has competence (article 163 (13));

(d) Cooperation with the International Seabed Authority as a whole through suitable arrangements (article 169).

These articles provide a sound legal basis for the cooperation between IOC and the Authority.

## III. ROLE OF THE COMMISSION IN SUPPORTING MARINE SCIENCE AND RELATED MATTERS

4. IOC is the sole organization in the United Nations system which is dedicated to multidisciplinary oceanographic research and related activities. Its programmes comprise Ocean Sciences, including Ocean Science in relation to Living Resources (OSLR), Ocean Science in relation to Non-living Resources (OSNLR), Marine Pollution Research and Monitoring (GIPME), Ocean Dynamics and Climate (ODC) and Ocean Mapping; Ocean Services, including Global Sea-level Observing System (GLOSS), the Integrated Global Ocean Service System (IGOSS) jointly with the World Meteorological Organization (WMO), Drifting Buoy Cooperation Programme (DBCP) jointly with WMO, the International Tsunami Warning System (ITSU), the International Oceanographic Data Exchange (IODE) and the development of the Global Ocean Observing System (GOOS) jointly with WMO, the United Nations Environment Programme (UNEP) and the International Council of Scientific Unions (ICSU); and Training, Education and Mutual Assistance (TEMA). A more detailed information document introducing IOC's programmes was distributed at the twelfth (spring) session of the Preparatory Commission, held at Kingston in February 1994. 2/

5. Many of the IOC programmes and projects are more or less related to the future tasks of the International Seabed Authority. For example:

- General Bathymetric Chart of the Oceans (GEBCO), co-sponsored by IOC and IHO;

/...

- International Geological-Geophysical Atlases of the Atlantic and Pacific Oceans (GAPA), as well as the regional ocean mapping activities under the Ocean Mapping programme;
- Deep-sea geology and geophysics research under OSNLR;
- Deep-sea ecosystem and biodiversity research under OSLR;
- Marine pollution baseline studies in the open ocean, marine pollution monitoring and research, marine impact assessment as well as methodology, standards and reference material development under GIPME;
- The Global Ocean Observing System using satellite, buoy, ship, coastal observing means (GOOS) and oceanographic data exchange on a global basis in all fields of oceanography under IODE; and training in all programme activities, etc.

could all contribute to the work of the International Seabed Authority, particularly at its initial stage when the marine science capability of the Authority is yet to be developed. IOC, with its fully fledged marine science capabilities, could meet the requirements of providing comprehensive scientific advice to the Authority.

## IV. TRAINING

6. Training qualified experts for the International Seabed Authority and for the developing member States will be a most important task for the Authority. To this end, the short-term training organized by the competent international organizations, including IOC, may be a valuable supplement to the existing long-term training on a bilateral basis. IOC is providing annually, through its TEMA programme, short-term training fellowships which enable scientists from developing countries to participate in various highly scientific and technical training activities in different fields. IOC would like to cooperate with the Authority in training experts for the Authority, particular in the light of the scientific and technical needs of the Authority in the field of marine sciences.

7. In this context, the Training Panel of the Preparatory Commission may wish to consider the involvement of various international organizations, including IOC, in the Authority's endeavour to train qualified experts.

## Notes

1/ IOC/EC-XXVII/15 and Addendum, containing a whole series of issues related to the law of the sea, including the International Seabed Authority.

2/ IOC/INF 961.

# Annex III

## DOCUMENTS SUBMITTED BY THE TRAINING PANEL TO THE GENERAL COMMITTEE

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UNITED
NATIONS

**LOS**

UNITED NATIONS
CONVENTION ON THE
LAW OF THE SEA

Distr.
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LOS/PCN/BUR/R.9
27 August 1991

ORIGINAL: ENGLISH

PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 12-30 August 1991

# REPORT OF THE FIRST MEETING OF THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

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## LETTER OF TRANSMITTAL

21 August 1991

Dear Mr. Chairman,

In accordance with paragraph 3.1.3 of LOS/PCN/SCN.2/L.6/Rev.1, we, the members of the Training Panel, were requested to, inter alia, establish a training schedule based on the information furnished by the registered pioneer investors in accordance with the policy set forth in paragraph 2.6 of the above document, bearing in mind particularly the initial manpower requirements of the Enterprise; and to formulate the individual traineeships to be offered, including their objectives, a description of the training, eligibility requirements and their duration and location, as well as other requirements that may be attached to a particular traineeship.

The Panel met on 19, 20 and 21 August 1991 at the United Nations Headquarters and held four meetings on the training schedule. At its first meeting, the Panel adopted its agenda and elected Mr. Baidy Diene as its Coordinator.

The Panel was of the opinion that the traineeships should cover the priority disciplines set forth in LOS/PCN/BUR/R.6 that identified five engineering disciplines (chemical/metallurgical, electrical, electronic mechanical and mining) as well as marine geology, marine geophysics and marine ecology.

The Panel would like to thank you and the Preparatory Commission for the opportunity to assist in the implementation of the obligations of the pioneer investors. The Group also wishes to draw your attention to the valuable contribution made by the Special Representative of the Secretary-General for the Law of the Sea, Mr. Satya N. Nandan, and also thanks the Secretariat of the Office for Ocean Affairs and the Law of the Sea for its assistance at our meetings.

Yours sincerely,

Signed in New York on 21 August 1991

Jung-Ho AHN
(Republic of Korea)

Arne BJORLYKKE
(Norway)

Baidy DIENE
(Senegal)

Mr. José Luis Jesur
Chairman of the Preparatory Commission
for the International Seabed Authority
and for the International Tribunal
for the Law of the Sea
New York, New York

/...

Nkwelle EKANEY
(Republic of Cameroon)

Shair Bahadar KHAN _for_ Abul FARAH
(Pakistan)

Ivan F. GLOUMOV
(Union of Soviet Socialist Republics)

Jean-Noël GONY
(France)

Wojciech J. GORALCZYK
(Republic of Poland)

Marcus Aguiar GORINI
(Brazil)

Peter HALBACH
(Germany) - absent

Mehdi KAMALIPOUR
(Islamic Republic of Iran)

Zohair Abdulhafeez NAWAAB
(Saudi Arabia)

Francisco E. NULLO
(Argentina) - absent

Mohamed SADIQUI
(Kingdom of Morocco) - absent

T. L. GILL _for_ M. M. K. SARDANA
(India)

Marco FLUCKIGER STAHLE
(Chile)

Augustin K. TCHOTA
(Togo)

Abderrahman TOUHAMI
(Tunisia) - absent

Akira USUI
(Japan)

Leopold WEBER
(Austria) - absent

Jin XIANGLONG
(People's Republic of China)

/...

## REPORT OF THE FIRST MEETING OF THE TRAINING PANEL

### Report on the Training Schedule

1. The Training Panel was established in accordance with the decision taken by the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea which is embodied in "The Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme" (LOS/PCN/SCN.2/L.6/Rev.1) for deep seabed mining, adopted by the Preparatory Commission on 31 August 1989. It states, inter alia, that:

> "The Panel will consist of 15 members who are experts in appropriate fields. The composition of the Panel will be determined by the Preparatory Commission and revised as required. The Training Panel will meet during meetings of the Preparatory Commission, unless the Commission decides otherwise."

2. In accordance with the guidelines, the Chairman undertook a series of consultations with the Chairmen of the regional groups with respect to the composition of the Training Panel. It was agreed that the guidelines should be modified as regards the composition of the panel. Accordingly, the Panel consists of 21 members.

3. In paragraph 3.1.3 of the "Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme" (LOS/PCN/SCN.2/L.6/Rev.1), the Training Panel is required to:

(a) Establish a training schedule based on information furnished by the registered pioneer investors in accordance with the policy set forth in paragraph 2.6, bearing in mind particularly the initial manpower requirements of the Enterprise;

(b) Formulate the individual traineeships to be offered, including their objectives, a description of the training, eligibility requirements and their duration and location, as well as other requirements that may be attached to a particular traineeship; and

(c) Open a register incorporating all the necessary information on the traineeships being offered under the current schedule.

4. The Panel commenced its work on 19 August 1991. The Special Representative briefed the Panel on its mandate. France, Japan and the Union of Soviet Socialist Republics, as registered pioneer investors, furnished the Panel with information on their respective training programmes in documents LOS/PCN/TP/1991/CRP.2, LOS/PCN/TP/1991/CRP.3, and LOS/PCN/TP/1991/CRP.4, respectively. The Panel was informed that India would be submitting information on its training programme shortly.

5. The Panel reviewed the above information and was informed by each of the registered pioneer investors that their programmes would cater to three traineeships. During its discussions, the view was expressed that traineeships should not only cover the areas of marine geology and marine geophysics but also the various engineering disciplines identified in LOS/PCN/BUR/R.6.

6. A number of questions were raised regarding the language in which training would be conducted and the duration of language refresher courses if required. A proposal was made to have an integrated training programme in which all registered pioneer investors would participate and that would be located in one facility. The Panel, however, was of the opinion that such an effort, though commendable, would be very difficult to implement at this stage. It was suggested that India and China, both of whom were still to submit information on their training programmes, could give consideration to such a programme.

7. The Panel expressed its appreciation for the information provided by the registered pioneer investors. It expressed its satisfaction with the training programme offered by France with regard to course content, duration and areas of training. The information provided by France was described by the Panel as a "model" and its training programme, which would offer traineeships in mining geology, geophysics and mechanical engineering starting in September 1992 of a nine to fifteen months duration exclusive of a language refresher course of up to three months if needed by the trainee, was accepted by the Panel. The Panel, therefore, requested the United Nations Office for Ocean Affairs and the Law of the Sea to prepare a draft note verbale announcing the three traineeships for approval by the Preparatory Commission.

8. With regard to the traineeships offered by Japan and the USSR, the Panel was of the view that further elaboration was required. In respect of the former, the Panel was of the view that the proposed commencement date for the traineeships of May 1993 and their duration (six months) raised some cause for concern. During its deliberations, the Panel was informed that the traineeships offered by Japan would be in marine geology and marine geophysics. The Panel was also informed that the duration of traineeships would be from May to December 1993, and that changes to the commencement date and the duration of traineeships in the Japanese programme would be difficult to make. It was suggested that additional modifications to the above parameters would be welcomed. It was also suggested that the note at the end of the Japanese submission to the effect that "all of the above are subject to change" created too much uncertainty. The Panel was informed that this annotation did not apply to the entire programme but to specific elements that may be modified at the time the traineeships are implemented.

9. As far as the information submitted by the USSR, the Panel again expressed the view that the proposed commencement date for the traineeships (October 1993) and their duration (six months) seen in light of the French programme, suggested the need for some modifications. Another area of concern was the fact that the USSR required either the governments of trainees or the United Nations to pay the passage of trainees in its programme. It was pointed out that the obligations of the registered pioneer investors with regard to training was to be free of cost to the Preparatory Commission.

10. The Panel invited both Japan and the USSR to consider making the adjustments to their training programmes as suggested above and to resubmit the information on their training programmes to the Training Panel at the next session of the Preparatory Commission in Kingston. The Panel also requested India to submit the information on its training programme at the same time. Additionally it requested the Secretariat to prepare a draft note verbale on the programme submitted by France, for the approval of the Preparatory Commission and subsequent circulation by the Secretary-General, so that from the nominees entered in the Register on traineeships, a selection can be made at the next session in Kingston.

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11. It will be recalled that Step 1, paragraph (c) of document LOS/PCN/SCN.2/L.7 states that:

> "During the same period that nominations are being taken, the secretariat will request registered pioneer investors to indicate what traineeships are presently available. It should also be asked to make inquiries with other technologically advanced States about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments, so that further use can be made of the information on eligible persons submitted by nominating Governments."

In this regard, the Chairman of the International Ocean Institute submitted a five week training programme including a cruise on a research vessel to the Training Panel. The course which will include an introduction to the Law of Sea Convention and an introduction to oceanography, will focus on mining economics, high-technology development and management, project planning and project funding. The Chairman of the International Ocean Institute indicated that the Institute could accept and fund sixteen participants every year.

12. The Panel will consider this submission and any other submissions at the next session in Kingston, Jamaica.

UNITED
NATIONS

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INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Tenth Session
Kingston, Jamaica,
24 February-13 March 1992

# REPORT OF THE SECOND MEETING OF THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

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## Letter of Transmittal

Dear Mr. Chairman,

In accordance with paragraph 3.1.2 of the Draft Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme contained in document LOS/PCN/SCN.2/L.6/Rev.1, we the members of the Training Panel met on 25, 26, 27 and 28 February 1992 in Kingston and held seven meetings to, inter alia, consider the revised training programmes of Japan and the Russian Federation, examine the information submitted by India on its training programme, establish the minimal qualifications of applicants for the training programme, develop criteria for selecting candidates and review the draft note verbale on the training programme offered by France.

The Panel approved the revised training programme offered by Japan and a new draft note verbale announcing both the training programmes of Japan and France. The Panel requested India to resubmit information on its revised training programme at the summer session.

Unfortunately, the Panel did not receive any information on the revised training programme offered by the Russian Federation and was therefore unable to proceed any further with that programme.

During its meeting the Panel was able to establish minimal qualification requirements for candidates and to develop criteria for selecting candidates.

The representative of Germany stated the intention of his Government to offer traineeships that are comparable to those that have been offered by the registered pioneer investors to the Preparatory Commission at the summer session. The Panel was of the opinion that the Preparatory Commission should appeal to other technologically advanced States about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments, so that further use can be made of the information on eligible persons submitted by nominating Governments.

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The Panel would like to thank you and the Preparatory Commission for the opportunity to assist in the implementation of the obligations of the pioneer investors. The Group also wishes to draw your attention to the valuable contribution made by the Secretariat of the Division for Ocean Affairs and the Law of the Sea and for its assistance at our meetings.

Yours sincerely
_Signed_ in Kingston on 28 February 1992

1. AHN, Jung-Ho - Republic of Korea
2. BJORLYKKE, Arne - Norway
3. DIENE, Baidy - Senegal
4. GONY, Jean-Noel - France
5. GORINI, Marcus Aguiar - Brazil
6. HALBACH, Peter - Germany
7. KAMLIPOUR, Mehdi - Islamic Republic of Iran
8. NAKAO, S. - Japan
9. NAWAB, Zohair - Saudi Arabia
10. SADIQUI, Mohamed - Kingdom of Morocco

11. ALDO, Famolaro for Marco STAHLE of Chile
12. BETAH, Samuel S. for Nkwelle EKANEY of Republic of Cameroon
13. HUSSAIN, Faqir S.A. for Abul FARAH of Pakistan
14. YUNGCHEN, Yu for Jin XIANGLONG of People's Rep. of China
15. RAO, J.V.R. for M.M.K. SARDANA of India

16. GLOUMOV, Ivan - Russian Federation (Absent)
17. GORALCYK, Wojciech J. - Republic of Poland (Absent)
18. NULLO, Francisco E. - Argentina (Absent)
19. TCHOTA, Augustin - Togo (Absent)
20. TOUHAMI, Abderrahman - Tunisia (Absent)
21. WEBER, Leopold - Austria (Absent)

Mr. José Luis Jesus
Chairman of the Preparatory Commission
for the International Seabed Authority
and for the International Tribunal for
the Law of the Sea
Kingston, Jamaica

/...

## Report of the Second Meeting of the Training Panel

1. At its first meeting at United Nations Headquarters in New York, 19-21 August 1991, the Training Panel reviewed the information submitted by France, Japan and the Russian Federation on their respective training programmes. The Training Panel expressed satisfaction with the training programme offered by France and invited both Japan and the Russian Federation to consider making adjustments to their training programmes, as suggested in its Report of the First Meeting of the Training Panel contained in document LOS/PCN/BUR/R.9, and to resubmit this information to the Panel at its second meeting. The Training Panel requested India to submit the information on its training programme at the same time and also requested the secretariat to prepare a draft note verbale on the training programme submitted by France.

2. Participation by the members of the Training Panel in this its second meeting raised some questions. While membership in the Panel is twenty-one, only nine actual members of the Panel were present for the meeting. Therefore, of the total of fifteen persons who attended its meetings, six were temporary substitutes. The members of the Panel who attended this meeting would like to appeal to the Preparatory Commission to ensure the participation of all Panel members in future meetings.

3. The Panel started its work for the second meeting on 25 February 1992 and held seven meetings on four consecutive days through 28 February 1992. The Director of the Division for Ocean Affairs and the Law of the Sea welcomed the members of the Training Panel. The Panel had before it document LOS/PCN/TP/1992/CRP.5 of 19 February 1992, "Information on a Revised Training Programme - submitted by the delegation of Japan", document LOS/PCN/TP/1992/CRP.6 of 19 February 1992, "Training Programme for the Preparatory Commission of the International Seabed Authority as Required of Pioneer Investors - An outline of the Training Programme submitted by the delegation of India" and document LOS/PCN/TP/1992/CRP.7 of 24 February 1992 "Draft Note Verbale on the French Training Programme." The Panel did not receive any information on the revised training programme offered by the Russian Federation and was therefore unable to proceed any further with that programme.

4. The Training Panel adopted an agenda for its second meeting which was as follows:

(i) Review of the information on a revised training programme by Japan;

(ii) Review of the information on the training programme offered by India;

(iii) Establishment of the minimal qualifications of applicants for the training programmes;

(iv) Criteria for selecting candidates;

/...

(v) Review of the draft note verbale on the training programme offered by France;

(vi) Other issues related to the Preparatory Commission Training Programme; and,

(vii) Programme of work for the summer meeting.

5. During the course of the meeting, members of the Training Panel expressed some general views on, inter alia, uniformity in each of the training programmes, the comprehensiveness of the disciplines within which training had been offered in relation to the priority disciplines outlined in LOS/PCN/BUR/R.6, "Report of the Group of Technical Experts to the General Committee of the Preparatory Commission" of 17 August 1989, and whether or not the content of training programmes should be limited to the exploration and exploitation of polymetallic nodules. Given the prognosis of a long delay in the commercial viability of deep seabed mining, concerns were raised as to the job possibilities for trainees who complete the training programmes.

6. While the need for uniformity in all training programmes was generally accepted by Panel members, it was pointed out that the training programmes offered by the Registered Pioneer Investors had to take into account the facilities that were available in the concerned States and the disciplines that each registered pioneer investors was prepared to provide training in. It was also pointed out that the Panel was an advisory group that could make recommendations to the General Committee of the Preparatory Commission on training programmes but that it was not empowered to design training programmes for the Registered Pioneer Investors.

7. The view was expressed that in the training programmes that had been offered to the Preparatory Commission at the present time, none of them took into account environmental concerns whether as a component of the traineeship or as separate training courses in marine ecology. It was proposed that the next training programme offered should include traineeships in marine ecology for marine biologists and marine geochemists. A contrary view was that if the training programmes as proposed were to have environmental concerns added on to them, this would prove to be a burden to the States offering them. It was suggested that although LOS/PCN/BUR/R.6 included traineeships in marine ecology, the traineeships that had been offered so far were equally sought after. It reiterated that the choice of the type of traineeships to offer was the right of the State offering the traineeship and that the Training Panel could only recommend traineeships.

8. In relation to whether or not the content of training programmes should be limited to polymetallic nodules, in general, the Panel was of the view that the consideration of other marine minerals in the traineeships being offered, could only be done in a cursory manner and would, therefore, not be very useful. Other marine minerals could be touched upon in the course of dealing with the resources of the Area.

/...

9. In its review of the information on the revised training programme offered by Japan, the Panel heard views relating to Profile 3 of the programme which is for training in electronic engineering. It was suggested that since electrical engineering related to power generation and not electronics, in the qualifications of applicants for this training programme, it was inadvisable to request qualifications in that discipline. In connexion with this traineeship, it was also pointed out that the trainee can only be expected to acquire a basic knowledge of the techniques necessary to operate and maintain on-board equipment for, inter alia, navy navigation satellite systems and global positioning systems since these systems were complicated.

10. The Training Panel adopted the training programme offered by Japan that offered three traineeships in geology, geophysics and electronic engineering respectively, for a period of approximately ten months beginning in May 1993.

11. The Training Panel reviewed the information submitted by India for its training programme. The training programme offered by India is for three trainees all of whom would be required to take courses in geology and geophysics, marine mineral resources, and marine ecology and receive practical training in laboratories and on board an exploration cruise. The proposed duration of the traineeships would be ten months.

12. In its consideration of the training programme offered by India, the Panel was of the view that it would be more desirable for the programme as offered to be reorganized so as to provide clear profiles for training in three of the eight priority disciplines set forth in LOS/PCN/BUR/R.6. While the training Panel expressed the desire for India to provide traineeship in the other disciplines mentioned in the above report in addition to their offer of traineeships in geology and geophysics, it recognized that it was for India to offer traineeships in those disciplines that India was predisposed to providing training in. The view was also expressed that the duration of the ship-board training offered of six weeks was too short and that it should be increased. The Training Panel, therefore, requested India to resubmit information on its revised training programme at the next session taking into account the Panel's comments on LOS/PCN/TP/1992/CRP.6.

13. With regard to minimum qualifications of applicants, the Training Panel decided to review those qualifications that had been provided in the training programmes offered by Japan and France with a view to defining criteria that could be applied to future applicants. In considering the qualifications as outlined in the training programme of France for mining geology and geological data processing, exploration geophysics and naval engineering, it was brought to the attention of the Training Panel that in LOS/PCN/TP/1991/CRP.2 of 14 August 1991, there had been an error in each of the three profiles that had been presented in its annex. In each profile, following the preambular paragraph that outlines the responsibility of each trainee for that discipline, the ensuing sentence reads .... "Candidates should therefore possess:".... In the view of the Panel, the rest of the sentence outlined the required

qualifications of applicants. The Panel was however informed that the correct wording of the first part of the sentence should be

> "After the training programme, candidates should therefore, possess:"....

As a result, those items listed subsequently in the report are not qualifications candidates should possess before the course, but capabilities they would acquire after successfully completing the course. It was requested that a corrigendum to the document be issued to reflect this.

14. With regard to the minimum qualifications of applicants, the Training Panel established criteria in the following areas; education, experience, age, state of the applicant's health, language, and reasons for seeking training. In relation to the minimum educational requirements for applicants in both the training programme offered by France (in mining geology, exploration geophysics and naval engineering) and that offered by Japan (in geology, geophysics and electronic engineering), the Training Panel decided that applicants must possess either a postgraduate degree in science, a degree in engineering or a recognized diploma to take into account different education systems.

15. The Panel also recommended that applicants must possess at least two years technical experience in the relevant field. For applicants with doctorate degrees in science or engineering, the Panel was of the view that research work conducted by those applicants to fulfil the requirements for the doctorate degree could be substituted for the two year experience requirement.

16. With respect to the age of applicants it was pointed out that while previous documents on the subject had stipulated an age range of 25 and 35 years of age (LOS/PCN/SCN.2/L.7, para (b)(i)) as being preferred, there was no need to specify the minimum age as most applicants who had obtained a masters degree and had the minimal two years of experience would qualify. In discussions on the maximum age of applicants it was pointed out that a wide disparity could exist for an applicant who was 25 years old and one who was 40 years old. The latter, it was noted, may have a family and other concerns that could make a long training programme difficult. At the end of its discussion, the Training Panel decided to recommend a maximum age of 40 years for applicants.

17. As regards a candidate's physical and mental health, the Training Panel was of the view that some flexibility must be allowed the candidate and the host country. It recommended that the condition of the candidate's health should be certified by a local doctor, preferably identified through the host country's consulate in the candidate's country of origin. It was also recommended that since each host country had its own entry and residence requirements, notices announcing training programmes must make it clear that applicants should meet such requirements for the host country.

18. As concerns the language in which training would be conducted, it was pointed out that increasingly, English had become the world's scientific and technical language. The view was expressed that in the future it may be better

to establish an international training center rather than the national approaches currently being used. With regard to the training programme offered by France, the Panel agreed that candidates should have sound knowledge of both written and oral French.

19. Finally, the Training Panel recommended that since all of the criteria referred to above may not be sufficient to understand an applicant's motivation for applying for a traineeship, two documents should be requested as part of nominations. The first would be a brief explanatory note from the applicant indicating how the training programme would help further his or her career, and the second would be an explanatory note from the applicant's nominating Government indicating how the expert services acquired as a result of the training programme would benefit the State.

20. With regard to the contents of the draft note verbale as contained in document LOS/PCN/SCN.2/L.7, step 1, paragraph (b), in particular that "Governments should be asked to propose one nominee and one alternate with reference to the particular disciplines" ...., the Panel was of the view that the wording of the sentence would seem to suggest that if a candidate from a particular country was selected and was unable to attend a particular course, then the alternate would automatically qualify for the position. The Panel decided that in order to remove any doubts, it should be made clear that such was not the case. Therefore, it requested that in the note verbale the reference should be to two persons and not to a nominee and an alternate.

21. Since the Training Panel had approved the revised training programme offered by Japan, it requested that the draft note verbale prepared by the secretariat announcing the training programme of France contained in LOS/PCN/TP/1992/CRP.7 be reformulated to include the training programme offered by Japan, and, as applicable, inclusion of the criteria outlined above.

22. The reformulated draft note verbale is contained in LOS/PCN/BUR/R.16. In addition to including the training programme offered by Japan, it states that the training programme offered by France will be ready to start in November 1992. With this in mind, the Training Panel decided that the deadline for nominations for these two programmes should be no later than 15 June 1992, to allow for the selection of the six trainees during the summer 1992 session.

23. During the meeting and in response to step 1, paragraph (c) of document LOS/PCN/SCN.2/L.7 that states that "During the same period that nominations are being taken, the secretariat will request registered pioneer investors to indicate what traineeships are presently available. It should also be asked to make inquiries with other technologically advanced States about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments, so that further use can be made of the information on eligible persons submitted by nominating Governments," the representative of Germany stated that efforts were being undertaken to enable Germany to offer comparable traineeships in other disciplines to the Preparatory Commission. The results of these efforts would be made known during the summer session. The Training Panel expresses its deepest appreciation for the offer by Germany which is seen as being in the true spirit of the Convention, since Germany is not a registered pioneer investor.

24. To successfully conclude its work at the forthcoming meeting in New York, that is selecting candidates for the six traineeships announced in the note verbale, reviewing the information in the revised training programmes of India and the Russian Federation, examining the possible offer from China if agreement is reached on the performance of its obligations by the Preparatory Commission and examining the possible offer from Germany, the Panel requested the secretariat to conduct an initial screening of submitted nominations for completeness in respect of requirements. It also requested the secretariat to provide panel members with a synopsis prior to the arrival of panel members in New York.

25. As regards the selection process in New York, the Training Panel decided that if there were enough applications to warrant it, then the members of the Panel would form three groups to preselect candidates in the three disciplines being offered in the traineeships, i.e geology, geophysics and engineering. After preselection, the entire Panel would then meet to make the selection of six candidates for the traineeships from this short list. During its meeting the Training Panel defined the criteria for the selection of candidates bearing in mind the need to give priority to candidates from developing countries and to meet the principle of equitable geographical representation.

26. For its next meeting in New York, the programme of work of the Training Panel will be:

(i) Selection of the six trainees for the programmes offered by France and Japan;

(ii) Review the revised training programme of India and the Russian Federation with a view to circulating a note verbale announcing their programmes;

(iii) To examine the proposal of China if it is available, with a view to circulating a note verbale announcing its programmes;

(iv) To examine the training programme offered by Germany, if available, with a view to circulating a note verbale announcing it; and

(v) Any other matters relating to the Preparatory Commission training programme.

The Training Panel decided to meet during the first week of the summer session in New York.

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12 March 1992

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PREPARATORY COMMISSION FOR THE INTERNATIONAL
SEABED AUTHORITY AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Tenth session
Kingston, Jamaica
24 February-13 March 1992

## REPORT OF THE SECOND MEETING OF THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

### Corrigendum

Paragraph 2 of the report

In the third line, replace nine by ten

In the fourth line, replace six by five

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Tenth Session
Kingston, Jamaica
24 February-13 March 1992

# NOTE VERBALE ON THE TRAINING PROGRAMMES OFFERED BY FRANCE AND JAPAN SUBMITTED BY THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

The Under-Secretary-General for Legal Affairs, the Legal Counsel presents his compliments to States participating in the Preparatory Commission for the International SeaBed Authority and for the International Tribunal for the Law of the Sea and wishes to invite Member and Observer Governments to submit for the consideration of the Training Panel the names of two persons for each of six traineeships under the above programmes, three offered under the training programme of France and three under the training programme of Japan.

The training programme of France is for one traineeship in each of the following disciplines:

Mining geology and geological data processing;
Exploration geophysics; and
Naval engineering.

Courses will be taught in French and conducted in two stages: A theoretical stage in one or several institutions of higher learning in France, of between six and nine months duration; and a practical stage that includes marine training in the laboratories of IFREMER (Institut Français de Recherche pour l'Exploitation de la Mer) and on board a research vessel for a period of between three and six months. A language refresher course of a maximum of three months is available if necessary. Nominees should possess a sound knowledge of French, either a post-graduate degree in science, a degree in

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engineering, or a recognized diploma, at least two years of professional experience in the relevant discipline, and should be no more than 40 years old. Details of each traineeship and the specific qualifications required are contained in document LOS/PCN/TP/1991/CRP.2/Rev.1 (a copy of which is enclosed). Successful applicants, subject to the entry and residence requirements of France, will receive traineeships from the French Ministry of Foreign Affairs for the programme which will be ready to start in November 1992.

The training programme of Japan is for one traineeship in each of the following disciplines:

Geology;
Geophysics; and
Electronic engineering

Courses will be taught in English and conducted in four phases: a general orientation phase of about five weeks during which successful applicants receive Japanese language training to help them to adapt to living in Japan; a theoretical and practical training phase in all disciplines of about seventeen weeks, that will be organized by the Geological Survey of Japan (GSJ) and conducted at their institute, at which time, successful applicants will select a relevant research topic; a practical training phase on the research cruise by the Deep Ocean Resources Development Company Limited (DORD) of about six weeks; and a research phase of about thirteen weeks during which trainees continue working on research topics chosen during the second phase and prepare a report on their training for onward transmission to the Training Panel. Nominees should possess sufficient command of written and spoken English, either a post-graduate degree in science, a degree in engineering, or a recognized diploma, at least two years of professional experience in the relevant discipline and should be no more than 40 years old. Details of each traineeship and the specific technical qualifications required are contained in document LOS/PCN/TP/1992/CRP.5 of 24 January 1992 (a copy of which is enclosed). Successful applicants, subject to the entry and residence requirements of Japan, will receive traineeships for the training period of approximately 10 months starting in May 1993.

The travel costs and living expenses of successful applicants will be provided for under the traineeships which will also include appropriate arrangements for insurance to cover, inter alia, liability to third parties for damage to persons or property caused by trainees, and sickness, accident, disability or death of a trainee during the course of training.

Governments of successful applicants will be required to give assurances to the Preparatory Commission that the person(s) selected will be:

(i) Made available at the time and for the period established in the traineeship;

(ii) Placed on leave of absence with pay during the period of their training, and that upon completion of their training they will be appropriately reabsorbed in their professions or employed in related fields; and,

(iii) Made available to the Enterprise at its request and, in the interim period, to the Preparatory Commission should it require their expert service if so requested

Nominations should be accompanied by:

(i) the curriculum vitae of candidates indicating the specific traineeship and training programme (either Japan or France) of interest;

(ii) notarized copies of academic diplomas;

(iii) the academic transcripts of candidates;

(iv) a brief explanatory note from the nominees indicating how the training programme will further their careers; and

(v) a brief explanatory note from the nominating Government as to how the expert services acquired as a result of the training programme will benefit the State.

It would be appreciated if such nominations could be forwarded to the Division for Ocean Affairs and the Law of the Sea by 15 May 1992 and no later than 15 June 1992.

Successful trainees will be awarded a Training Certificate by the Preparatory Commission for the International SeaBed Authority and for the International Tribunal for the Law of the Sea.

The Under-Secretary-General, the Legal Counsel avails himself of this opportunity to renew to States participating in the Preparatory Commission for the International SeaBed Authority and for the International Tribunal for the Law of the Sea the assurances of his highest consideration.

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New York, 10-21 August 1992

## REPORT OF THE THIRD MEETING OF THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

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* Reissued for technical reasons.

# LETTER OF TRANSMITTAL

Dear Mr. Chairman,

In accordance with paragraph 3.1.2 of the Draft Principles, Policies, Guidelines and Procedures of the Preparatory Commission Training Programme (LOS/PCN/SCN.2/L.6/Rev.1), we the members of the Training Panel met from 10 to 14 August 1992 in New York and held nine meetings to, inter alia, consider the revised training programmes of India and the Russian Federation, to select six trainees for the traineeships under the training programmes offered by France and Japan and to examine, if available, both the training programme of the People's Republic of China and that offered by Germany.

The Panel approved the revised training programmes offered by India and the Russian Federation and the contents of a new draft note verbale announcing the six traineeships under those programmes.

The Panel selected six candidates for the traineeships under the training programmes offered by France and Japan. In the absence of qualified candidates for the traineeship in naval engineering offered under the French training programme, it was decided to defer that traineeship and to transfer it to one in mining geology.

The representative of the People's Republic of China informed the Panel that his Government's training programme would be submitted before the beginning of the next session at Kingston.

The representative of Germany informed the Panel that the Ministry of Economic Cooperation had agreed to finance the training of perhaps three or four trainees. The training programme was being worked on at the moment and would be submitted at the next session at Kingston.

The Panel would like to thank you and the Preparatory Commission for the opportunity to assist in the implementation of the obligations of the pioneer investors.

Mr. José Luis Jesus
Chairman of the Preparatory Commission
for the International Seabed Authority
and for the International Tribunal for
the Law of the Sea
New York

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Yours sincerely,

Signed in New York on 14 August 1992

1. AHN, Jung-Ho - Republic of Korea
2. BJORLYKKE, Arne - Norway
3. DIENE, Baidy - Senegal
4. FLUCKIGER, Marco - Chile
5. GLOUMOV, Ivan - Russian Federation
6. GONY, Jean-Noël - France
7. GORALCZYK, Wojciech - Poland
8. KAMALIPOUR, Medhi - Islamic Republic of Iran
9. NAKAO, Seizo - Japan
10. NAWAB, Zohair - Saudi Arabia
11. RAO, J. V. R. - India
12. SADIQUI, Mohamed - Morocco
13. TOUHAMI, Abderrahman - Tunisia
14. XIANGLONG, Jin - China
15. HUSSAIN, Faqir Syed Asif for Abul FARAH - Pakistan
16. BAENA SOARES, Rodrigo de Lima for Marcus Aguiar GORINI - Brazil
17. BALLAH, Lennox (Chairman of the Special Commission 2), ex-officio member of the Training Panel
18. EKANEY, Nkwelle - Cameroon (Absent)
19. HALBACH, Peter - Germany (Absent)
20. NULLO, Francisco - Argentina (Absent)
21. TCHOTA, Augustin - Togo (Absent)
22. WEBER, Leopold - Austria (Absent)

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## RE ORT OF THE THIRD MEETING OF THE TRAINING PANEL

1. At its first meeting, held on 10 August 1992, the Training Panel decided to adopt the following agenda for its third meeting:

(a) Review of the revised training programme submitted by India;

(b) Selection of six candidates for the traineeships under the training programmes offered by France and Japan;

(c) Review of the revised training programme submitted by the Russian Federation.

### Review of the revised training programme submitted by India

2. In its review of the revised training programme offered by India (LOS/PCN/TP/1992/CRP.8), the Panel decided that the upper age-limit of 35 years in the Indian programme should be changed to 40 years in conformity with the decision taken at the second meeting of the Training Panel (see "Report of the Second Meeting of the Training Panel to the General Committee of the Preparatory Commission", document LOS/PCN/BUR.15, para. 16) and in order to ensure uniformity with the French and Japanese training programmes. A corrigendum has been issued to document CRP.8 to reflect that decision. The Panel then adopted the training programme, which offers one traineeship in each of the following disciplines, for a period of 10 months beginning in October 1993:

Mining geology;

Exploration geophysics;

Chemical engineering.

### Selection of six candidates for the traineeships under the training programmes offered by France and Japan

3. Given the number of applicants, a total of 68, which included five late nominations that were only received a week before the meeting of the Preparatory Commission, the Training Panel decided that a necessary first step in the selection process would be to preselect applicants on the basis of some of the criteria it had established at its last meeting at Kingston, namely academic qualifications, age and language (LOS/PCN/BUR/R.15, para. 14). The Panel had at its disposal two documents prepared by the Secretariat: (1) LOS/PCN/TP/1992/CRP.9, containing a summary sheet on each applicant in the original language of submission, and (2) LOS/PCN/TP/1992/CRP.10, containing a synopsis of the applications submitted, as well as the complete file of each applicant. The Panel found that 33 applicants fulfilled the three criteria mentioned above. The 33 applicants consisted of 3 applicants from 3 African countries; 7 applicants from 2 countries of the Latin American and the Caribbean region; 13 applicants from 8 Asian countries; and 10 applicants from 2 Eastern European countries.

4. Having reviewed the applications for the traineeship in naval engineering under the training programme offere by France, the Panel found that none of the applicants were sufficiently qualified and that the traineeship in that discipline would need to be deferred and transferred to a traineeship in mining geology for which there were a number of highly qualified applicants. The French authorities have informally agreed to this.

5. The Panel decided that in the second stage of the selection process, i.e., selecting six trainees from the remaining 33 applicants, it would focus on the other criteria which had been established at the second meeting at Kingston, namely professional experience, reasons for seeking training and how the training would benefit the nominating Government (LOS/PCN/BUR/R.15, paras. 14, 15 and 19), and rank the applicants according to how they fulfilled those criteria. Having selected the most qualified applicant for each traineeship, the Panel, in accordance with the decision it had taken at the second meeting at Kingston (LOS/PCN/BUR/R.15, para. 25), reviewed the geographical distribution of those applicants who had also met the requirements of the second stage, with a view to giving priority to candidates from developing countries.

6. Based on this procedure, the Panel selected two candidates from two African countries, one candidate from one country of the Latin American and the Caribbean region and three candidates from three Asian countries. The names of the candidates and their countries of origin are contained in document LOS/PCN/BUR/R.18. The Panel recommends these candidates for designation by the Preparatory Commission in respect of the traineeships under the training programmes offered by France and Japan.

7. No agreement was reached by the Panel on the question of whether nominees from countries which are now registered pioneer investors should be considered for the training programmes offered by other registered pioneer investors. While the note verbale announcing the traineeships under the training programmes offered by France and Japan was addressed to States participating in the Preparatory Commission, the Panel had at its second meeting at Kingston recommended that in the selection of candidates it was necessary to bear in mind the need to give priority to candidates from developing countries and to meet the principle of equitable geographical distribution (LOS/PCN/BUR/R.15, para. 25).

8. With respect to its future procedure for the selection of candidates, the Panel would like to point out that while it was flexible this time in its acceptance of incomplete files from applicants, this should not be considered a precedent. It would also like to remind nominating Governments that applicants must possess a postgraduate degree in science, a degree in engineering or a recognized diploma.

9. The Panel decided that those applicants who were not selected for the traineeships under the training programmes offered by France and Japan would not be considered for the traineeships under the training programmes offered by India and the Russian Federation unless they met the minimum criteria and

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their files were resubmitted. Governments are advised that should they wish to nominate the same applicants for the new traineeships being offered they will need to resubmit the files.

Review of the revised training programme submitted by the Russian Federation

10. The Panel decided to adopt the revised training programme submitted by the Russian Federation (LOS/PCN/TP/1992/CRP.11). The programme offers one traineeship in each of the following disciplines, for a period of approximately 10 months beginning in October 1993:

Marine geology;

Marine geophysics;

Marine ecology.

11. The training programme provides for full coverage of the travel expenses of the trainee on Aeroflot Airlines. In the cases where Aeroflot Airlines does not maintain services from an international airport in the trainee's country, the Government of the trainee will have to provide the travel expenses to cover the cost of air travel to the nearest airport where Aeroflot maintains services. The Panel agreed to make an exception in this case and decided that the Russian Federation had made a considerable effort to offer training, given the economic problems in that country.

12. The contents of a draft note verbale announcing the traineeships under the training programmes offered by India and the Russian Federation have been approved by the Panel. That draft note verbale has been issued as document LOS/PCN/BUR/R.19.

Training programme of the People's Republic of China

13. The representative of the People's Republic of China informed the Panel that his Government had undertaken a great deal of preparatory work with respect to the place of training and securing the necessary financial resources. He said that his Government's programme would be submitted before the beginning of the next session at Kingston.

Training programme offered by Germany

14. During the meeting, and in response to step 1, paragraph (c), of document LOS/PCN/SCN.2/L.7 that states that "During the same period that nominations are being taken, the secretariat will make inquiries with other technologically advanced States about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments, so that further use can be made of the information on eligible persons submitted by nominating Governments", the representative of Germany informed the Panel that the Ministry of Economic Cooperation had agreed to finance the training of perhaps three or four

trainees. The Karl Duisburg Gesellschaft, which provides training for trainees from developing countries, is presently working out a detailed training programme together with Professor Peter Halbach. This programme will be submitted at the next session at Kingston. Once selected by the Panel, the trainees will be required to go through the normal procedures for training used by the German authorities.

15. The German representative was requested to inquire whether the German authorities would allow trainees from other industrialized countries to participate in the training programme, at their own expense. It was pointed out that there was a market for this training in some of those countries.

## Programme of work for the fourth meeting of the Training Panel

16. The programme of work will be as follows:

(i) Selection of the six trainees for the traineeships under the training programmes offered by India and the Russian Federation;

(ii) Examination of the training programme of the People's Republic of China, with a view to circulating a note verbale announcing its programme;

(iii) Examination of the training programme of the Interoceanmetal (IOM) Joint Organization, if it is available, with a view to circulating a note verbale announcing its programme;

(iv) Examination of the training programme offered by Germany, with a view to circulating a note verbale announcing its programme.

17. The Panel decided that if it was not possible for it to meet during the first week of the eleventh session at Kingston, either in February or March 1993, it would meet in June 1993.

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New York, 10-21 August 1992

## SELECTION OF CANDIDATES BY THE TRAINING PANEL FOR DESIGNATION BY THE PREPARATORY COMMISSION IN RESPECT OF THE TRAINEESHIPS UNDER THE TRAINING PROGRAMMES OFFERED BY FRANCE AND JAPAN

1. The present document contains the report on the selection process utilized by the Training Panel for traineeships under the training programmes offered by France and Japan, and the names of the candidates selected and recommended for designation by the Preparatory Commission in respect of the above traineeships. The full report on the selection of the candidates is contained in the "Report of the Third Meeting of the Training Panel to the General Committee of the Preparatory Commission" (LOS/PCN/BUR/R.17, paras. 3-9).

2. The Training Panel reviewed a total of 68 applications, which included 5 applications that were received a week before the meeting of the Preparatory Commission. It preselected 33 applicants based on the criteria of academic qualifications, age and language. The preselected applicants consisted of 3 applicants from 3 African countries; 7 applicants from 2 countries of the Latin American and the Caribbean region; 13 applicants from 8 Asian countries; and 10 applicants from 2 Eastern European countries.

3. Following a review of the applications for the traineeship in naval engineering under the training programme offered by France, the Panel decided that none of the applicants were sufficiently qualified and that the traineeship in that discipline would need to be deferred and transferred to a traineeship in mining geology, for which there were a number of highly qualified applicants. The French authorities have informally agreed to this.

4. In the second stage of the selection process, the Panel decided to rank the remaining 33 applicants according to how they fulfilled the criteria of professional experience, their reasons for seeking training and how the training will benefit the nominating Government. Having selected the most qualified applicant for each traineeship, the Panel then considered their equitable geographical distribution, bearing in mind the need to give priority to candidates from developing countries.

5. The Panel selected the following candidates for the traineeships under the training programme offered by France:

(a) Mining geology and geological data processing

1. Mr. Kaiser Gonçalves de Souza (Brazil)
2. Mr. Ahmed Braham (Tunisia)

The alternates for the above candidates in order of rank are, first, Mr. Juan Campos Castan (Mexico) and, secondly, Mr. Carlos Pirmez (Brazil).

(b) Exploration geophysics

Mr. Mamadou Ndiaye (Senegal)

The alternate for the above candidate is Mr. Anton Todorov Genev (Bulgaria).

6. The Panel selected the following candidates for the traineeships under the training programme offered by Japan:

(a) Geology

Mr. Pramuan Kohpina (Thailand)

The alternate for the above candidate is Mr. Mohammad Karamati Moezabadi (Islamic Republic of Iran)

(b) Geophysics

Mr. Eu-Dug Hwang (Republic of Korea)

The alternate for the above candidate is Mr. Reynaldo Rodelas (Philippines)

(c) Electronic engineering

Mr. Mahmoud Mohammad-Taheri (Islamic Republic of Iran)

There is no alternate since only one candidate fulfilled the criteria established by the Panel.

7. In accordance with paragraph 3.1.3 (d) of the Draft Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme (LOS/PCN/SCN.2/L.6/Rev.1), the Training Panel herewith recommends the above candidates for designation by the Preparatory Commission for the traineeships under the training programmes offered by France and Japan.

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PREPARATORY COMMISSION FOR THE
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AND FOR THE INTERNATIONAL TRIBUNAL
FOR THE LAW OF THE SEA
New York, 10-21 August 1992

# DRAFT NOTE VERBALE ON THE TRAINEESHIPS UNDER THE TRAINING PROGRAMMES OFFERED BY INDIA AND THE RUSSIAN FEDERATION SUBMITTED BY THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

1. The Under-Secretary-General for Legal Affairs, the Legal Counsel, presents his compliments to States participating in the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea and wishes to invite member and observer Governments to submit for the consideration of the Training Panel the names of two persons for each of the six traineeships under the above programmes, three offered under the training programme of India and three under the training programme of the Russian Federation.

2. The training programme of India is for one traineeship in each of the following disciplines: mining geology; exploration geophysics; and chemical engineering. Courses will be taught in English and conducted in six phases. Two phases, each of four weeks' duration, will consist of cruises on a research vessel. The other four phases consist of an orientation and related practical phase at the National Institute of Oceanography in Goa (eight weeks), a training phase in which specified topics are studied in detail (eight weeks), further training at one of several institutions in India, including the National Metallurgical laboratory in Jamshedpur, the Regional Research laboratory in Bhubaneswar and Hindustan Zinc Ltd. in Udaipur (eight weeks), and a final phase of 12 weeks' duration during which trainees will select a topic for project work and prepare a detailed report under the guidance of an expert of the institute at which training is provided. Nominees should possess a sound knowledge of English, either a Master's degree in geology or geophysics or a postgraduate degree in chemical or metallurgical engineering and at least two years of experience in the relevant

disciplines and should be no more than 40 years of age. Details of each traineeship and the specific qualifications required are contained in documents LOS/PCN/TP/1992/CRP.8 (copies of which are enclosed). Successful applicants, subject to the entry and residence requirements of India, will receive traineeships for the training period of 10 months starting in October 1993.

3. The training programme of the Russian Federation is for one traineeship in each of the following disciplines: marine geology; marine geophysics; marine ecology. Courses will be taught in Russian or English, if necessary, and conducted in four stages: (1) a general orientation course of approximately four weeks, at which time also a short course to improve the trainees' knowledge of the Russian language can be held; (2) a theoretical and practical training phase in each discipline of approximately 16 weeks, to be held at the Yuzhmorgeologiya Science-Production Association; (3) a practical training phase of approximately eight weeks on board the research vessel *Yuzhmorgeologiya*; and (4) a research phase of approximately 12 weeks during which trainees will continue their theoretical and practical training, in particular the analysis of the research conducted in stages 2 and 3 and the preparation of a report on the training. Nominees should possess a sufficient command of spoken and written English and/or Russian; either a postgraduate degree or a degree from an institute of higher learning in geology, geophysics or ecology and at least two years of professional experience in the relevant disciplines, and should be no more than 40 years old. Details of each traineeship and the specific technical qualifications required are contained in document LOS/PCN/TP/1992/CRP.11 (a copy of which is enclosed). Successful applicants, subject to the entry and residence requirements of the Russian Federation, will receive traineeships for the training period of approximately 10 months beginning in October 1993.

4. The training programme of India has provided for the travel costs and living expenses of successful applicants.

5. Travel costs of successful applicants for the traineeships under the training programme offered by the Russian Federation are provided if Aeroflot Airlines services the applicants' home countries. If this is not the case, the nominating Governments or the applicants are responsible for the cost of travel from the home country to a neighbouring country which is serviced by Aeroflot Airlines. Accommodation and meals while on board the research vessel are provided under the traineeships.

6. The traineeships under the training programmes offered by India and the Russian Federation include appropriate arrangements for insurance to cover, *inter alia*, liability to third parties for damage to persons or property caused by trainees, and sickness, accident, disability or death of a trainee during the course of training.

7. Governments of successful applicants will be required to give assurances to the Preparatory Commission that the person(s) selected will be:

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(i) Made available at the time and for the period established in the traineeship;

(ii) Placed on leave of absence with pay during the period of their training, and that upon completion of their training they will be appropriately reabsorbed in their professions or employed in related fields;

(iii) Made available to the Enterprise at its request and, in the interim period, to the Preparatory Commission should it require their expert service if so requested.

8. Nominations must be accompanied by:

(i) The curriculum vitae of the applicant indicating the specific traineeship and training programme (either India or the Russian Federation) of interest;

(ii) Notarized copies of academic diplomas;

(iii) The academic transcripts of the applicant translated, if necessary, into one of the official languages of the United Nations;

(iv) A brief explanatory note from the nominee indicating how the training programme will further his or her career;

(v) A brief explanatory note from the nominating Government as to how the expert services acquired as a result of the training programme will benefit the State.

9. It would be appreciated if such nominations could be forwarded to the Division for Ocean Affairs and the Law of the Sea by 15 January 1993. Any submissions received after that date will not be considered by the Training Panel. Nominating Governments are advised that the files of unsuccessful applicants for the traineeships offered by France and Japan will not be considered by the Training Panel for the traineeships under the training programmes offered by India and the Russian Federation. Governments that wish to nominate the same applicants for the current traineeships have to resubmit the files. The Training Panel also advises nominating Governments that unless nominations are accompanied by all the required documentation, that nomination will not be considered by the Panel.

10. Successful trainees will be awarded a Training Certificate by the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea.

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Eleventh session
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22 March-2 April 1993

# SELECTION OF CANDIDATES BY THE TRAINING PANEL FOR DESIGNATION BY THE PREPARATORY COMMISSION IN RESPECT OF THE TRAINEESHIPS UNDER THE TRAINING PROGRAMMES OFFERED BY INDIA AND THE RUSSIAN FEDERATION

1. The present document contains a short report on the process utilized by the Training Panel to select candidates for the six traineeships under the training programmes offered by India and the Russian Federation, i.e., three traineeships under the training programme of India (mining geology, exploration geophysics and chemical engineering) and three traineeships under the training programme of the Russian Federation (marine geology, marine geophysics and marine ecology), and the names of the candidates selected and recommended for designation by the Preparatory Commission in respect of the above traineeships. The full report on the selection of the candidates is contained in the "Report of the Fourth Meeting of the Training Panel to the General Committee of the Preparatory Commission" (document LOS/PCN/BUR/R.29, paras. 2-7). The Panel would like to draw the attention of nominating Governments to the fact that the choice of the most suitable candidates was a difficult one as all the applicants were of a high standard.

2. The Training Panel reviewed a total of 33 applications, which included one application that was received two weeks before the meeting of the Panel. The other four late submissions were not considered since all of them were applications for traineeships for which there was already a sufficient number of qualified applicants. The Panel preselected 22 applicants based on the criteria of academic qualifications, age and language. The preselected candidates consisted of 9 applicants from 5 African countries; 12 applicants from 4 Asian countries and 1 applicant from 1 country from the Latin American and Caribbean region.

3. Following a review of the applications for the traineeship in chemical engineering under the training programme offered by India, the Panel decided that none of the applicants were sufficiently qualified and that the traineeship in that discipline would need to be deferred until a suitable candidate could be selected at the next meeting of the Panel. That traineeship will be announced in a new note verbale, the draft of which has been approved by the Panel (LOS/PCN/BUR/R.28).

4. In the second stage of the selection process, the Panel decided to rank the remaining 22 applicants according to how they fulfilled the criteria of

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professional experience, their reasons for seeking training and how the training would benefit the nominating Government. Having selected the most qualified applicant for each traineeship, the Panel then considered their equitable geographical distribution.

5. The Panel selected the following candidates for the traineeships under the training programme offered by India:

(a) Mining geology

Mr. Khalid Abdullah Kadi (Saudi Arabia)

The alternate for the above candidate is Mr. John Agyei Duodu (Ghana).

(b) Exploration geophysics

Mr. Kwame Odame Boamah (Ghana)

The alternate for the above candidate is Mr. Oi N'Guessan Pierre N'Guessan (Côte d'Ivoire).

6. The Panel selected the following candidates for the traineeships under the training programme offered by the Russian Federation:

(a) Marine geology

Mr. Thomas M. Munyao (Kenya)

The alternate for the above candidate is Mr. Badir Albadran (Iraq).

(b) Marine geophysics

Mr. Juan Lorenzo Diaz Naveas (Chile)

The alternate for the above candidate is Mr. Ibrahim Siroor Balla (Sudan).

(c) Marine ecology

Mr. Samir A. Mutwalli (Saudi Arabia)

The alternate for the above candidate is Mr. Fikrat Majied Hassan (Iraq).

7. In accordance with paragraph 3.1.3 (d) of the Draft Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme (LOS/PCN/SCN.2/L.6/Rev.1), the Training Panel herewith recommends the above candidates for designation by the Preparatory Commission for traineeships under the training programmes offered by India and the Russian Federation.

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Kingston, Jamaica
22 March-2 April 1993

# DRAFT NOTE VERBALE ON THE TRAINEESHIPS UNDER THE TRAINING PROGRAMMES OFFERED BY CHINA AND THE INTEROCEANMETAL JOINT ORGANIZATION AND ITS CERTIFYING STATES SUBMITTED BY THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

1. The Under-Secretary-General for Legal Affairs, the Legal Counsel, presents his compliments to States participating in the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea and wishes to invite member and observer Governments to submit for the consideration of the Training Panel the names of two persons for each of the eight traineeships under the above programmes, four offered under the training programme of China and four under the training programme of the Interoceanmetal Joint Organization (IOM) and its certifying States - the Republic of Bulgaria, the Republic of Cuba, the Republic of Poland, the Russian Federation, the Czech Republic and Slovakia.

2. The training programme of China is for one traineeship in marine geology, one in marine geophysics, and for two traineeships in metallurgical engineering. Courses will be taught in English and conducted in four stages. The first stage of approximately 10 weeks' duration applies to all traineeships and consists of general orientation courses and a one-week cruise to familiarize trainees with equipment and instruments on board the research vessel. A Chinese language course will also be held during this stage. The second stage of approximately 16 weeks' duration consists of theoretical and practical training in each discipline to be held in related training centres designated by the China Ocean Mineral Resources Research and Development Association (COMRA). The third stage of approximately 6 weeks' duration consists of a cruise on board the research vessel(s). During the fourth stage of approximately 12 weeks' duration the trainees will continue the theoretical and practical training received during stages two and three; select a topic for project work and prepare a report on their training.

3. Nominees should possess a sufficient command of Chinese and/or English. They should have a Master's degree or equivalent in either marine geology or marine geophyiscs; and have completed at least 4 years of study in metallurgical engineering or chemical engineering related to metallurgy at a University or Institute. Nominees should have at least two years practical experience in the relevant discipline; and be no more than 40 years old.

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Details of each traineeship and the specific qualifications required are contained in document LOS/PCN/TP/1993/CRP.13/Rev.1. Successful applicants, subject to the entry and residence requirements of China, will receive traineeships for the training period of approximately 11 months beginning in March 1994.

4. The training programme of the IOM and its certifying States is for one traineeship in geophysics, one in marine ecology, and for two traineeships in metallurgical engineering. Courses in geophysics and marine ecology will be taught in English. One of the metallurgical engineering courses will be taught in English and the other one in English and Spanish. The training programme will be conducted in four stages. The first stage of eight weeks' duration applies to all traineeships and consists of general orientation and theoretical lectures and research at the headquarters of IOM in Szczecin (Poland).

5. The second stage of 12 to 15 weeks' duration consists of theoretical and practical training in each discipline. Training in geophysics will be carried out in Bulgaria, at "Geologia i Geofizika" enterprises as well as at the Institutes of Geology and Oceanology of the Academy of Sciences. Training in marine ecology will be carried out consecutively in Poland at the Institute of Oceanology of the Academy of Sciences (seven weeks) and in the Russian Federation at the "Yuzhmorgeologiya" enterprise (seven weeks). The training for the two trainees in metallurgical engineering will be carried out at the scientific and industrial institutions specializing in metallurgical processing of conventional ores and in developing methods and techniques for processing polymetallic nodules. One trainee will be trained by Cuba at the Research Centre of the Mining Metallurgical Industry (CIPIMM) and at metallurgical enterprises and their research centres, while the second trainee will be trained jointly by the Czech Republic and Slovakia at the Sered', Istebne and Krompahi metallurgical enterprises, at the Institute of Mineral Raw Materials (Kutna Hora) as well as the Metallurgical Plant Design Institute.

6. The third stage of the training programme is of eight to nine weeks' duration. For the trainees in geophysics and marine ecology, this stage consists of a geological/ecological voyage on board one of the research vessels of "Yuzhmorgeologiya" enterprise, whereas trainees in metallurgical engineering will spend this time preparing and taking part in research work on processing nodules at metallurgical enterprises and research centres referred to in paragraph 5 above.

7. The fourth stage and final stage of eight weeks' duration will take place at IOM's headquarters and is devoted to the preparation of a detailed report on the training course by all trainees.

8. Nominees should possess a sound knowledge of English; for one of the traineeships in metallurgical engineering both English and Spanish. Knowledge of written and spoken Russian is also desirable. They should be university graduates with a degree equivalent to a Master's degree in either geophysics, or in marine ecology, oceanology or marine biology, and be qualified engineers in metallurgical engineering. Nominees should have at least two years practical experience in the relevant discipline, be able to work on a personal computer, and should be no more than 40 years of age. Details of each traineeship and the specific qualifications required are contained in document LOS/PCN/TP/1993/CRP.12/Rev.1. Successful applicants, subject to the entry and residence requirements of the certifying States of the IOM, will receive traineeships for the training period of approximately 10 months beginning between September and November 1994.

9. The training programmes of China and the IOM and its certifying States have provided for the travel costs, accommodation, stipends and medical care of successful applicants.

10. Governments of successful applicants will be required to give assurances to the Preparatory Commission that the person(s) selected will be:

(i) Made available at the time and for the period established in the traineeship;

(ii) Placed on leave of absence with pay during the period of their training, and that upon completion of their training they will be appropriately reabsorbed in their professions or employed in related fields; and

(iii) Made available to the Enterprise at its request and, in the interim period, to the Preparatory Commission should it require their expert service if so requested.

Nominations must be accompanied by:

(i) The curriculum vitae of the applicant indicating the specific traineeship and training programme (either China or IOM and its certifying States) of interest;

(ii) Notarized copies of academic diplomas;

(iii) The academic transcripts of the applicant translated, if necessary, into one of the official languages of the United Nations;

(iv) A brief explanatory note from the nominee indicating how the training programme will further his or her career;

(v) A brief explanatory note from the nominating Government as to how the expert services acquired as a result of the training programme will benefit the State.

11. It would be appreciated if such nominations could be forwarded to the Division for Ocean Affairs and the Law of the Sea by 15 July 1993. Any submissions received after that date will not be considered by the Training Panel. Nominating Governments are advised that the files of unsuccessful applicants for the previously announced traineeships will not be automatically considered by the Training Panel for the traineeships under the training programmes offered by China and the IOM and its certifying States. Governments that wish to nominate the same applicants for the current traineeships have to resubmit the files. The Training Panel again advises nominating Governments that unless nominations are accompanied by all the required documentation, they will not be considered by the Panel.

12. Successful trainees will be awarded a Training Certificate by the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea.

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# DRAFT NOTE VERBALE ON A TRAINEESHIP IN CHEMICAL ENGINEERING UNDER THE TRAINING PROGRAMME OFFERED BY INDIA SUBMITTED BY THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

1. The Under-Secretary-General for Legal Affairs, the Legal Counsel, presents his compliments to States participating in the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea and wishes to invite member and observer Governments to submit for the consideration of the Training Panel the names of two persons for one traineeship in chemical engineering under the training programme offered by India.

2. Courses for the traineeship in chemical engineering will be taught in English and conducted in four phases: 1) an orientation and related practical phase at the National Institute of Oceanography in Goa (eight weeks), 2) a training phase on board a research vessel (four weeks), 3) a practical training phase in which specific subjects are studied in detail (twenty weeks) at national institutes in India, e.g., the National Metallurgical laboratory in Jamshedpur, the Regional Research Laboratory in Bhubaneswar and Hindustan Zinc Limited in Udaipur; and a final phase of eight weeks' duration during which trainees will select a topic for project work and prepare a detailed report under the guidance of an expert of the institute at which the training is provided. Nominees should possess a sound knowledge of English, a graduate degree in chemical or metallurgical engineering and at least two years of experience, and should be no more than 40 years of age. Details of the traineeship and the specific qualifications required are contained in documents LOS/PCN/TP/1992/CRP.8 and Corr.1. Successful applicants, subject to the entry and residence requirements of India, will receive a traineeship in chemical engineering for the training period of 10 months starting in October 1993.

3. The training programme of India has provided for the travel costs and living expenses of the successful applicant, as well as for medical care during the training period.

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4. The Government of the successful applicant will be required to give an assurance to the Preparatory Commission that the person selected will be:

(i) Made available at the time and for the period established in the traineeship;

(ii) Placed on leave of absence with pay during the period of his or her training, and that upon completion of the training he or she will be appropriately reabsorbed in his or her profession or employed in related fields; and

(iii) Made available to the Enterprise at its request and, in the interim period, to the Preparatory Commission should it require his or her expert service if so requested.

Nominations _must_ be accompanied by:

(i) The curriculum vitae of the applicant;

(ii) Notarized copies of academic diplomas;

(iii) The academic transcripts of the applicant translated, if necessary, into one of the official languages of the United Nations;

(iv) A brief explanatory note from the nominee indicating how the training programme will further his or her career;

(v) A brief explanatory note from the nominating Government as to how the expert services acquired as a result of the training programme will benefit the State.

5. It would be appreciated if such nominations could be forwarded to the Division for Ocean Affairs and the Law of the Sea by 15 July 1993. Any submissions received after that date will not be considered by the Training Panel. The Training Panel again advises nominating Governments that unless nominations are accompanied by all the required documentation, that nomination will not be considered by the Panel.

6. The successful trainee will be awarded a Training Certificate by the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea.

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# REPORT OF THE FOURTH MEETING OF THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

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## LETTER OF TRANSMITTAL

Dear Mr. Chairman,

In accordance with paragraph 3.1.2 of the Draft Principles, Policies, Guidelines and Procedures of the Preparatory Commission Training Programme (LOS/PCN/SCN.2/L.6/Rev.1), we the members of the Training Panel met from 22 to 26 March 1993 in Kingston, Jamaica and held eight meetings to, inter alia, consider the training programme of China and that of the Interoceanmetal Joint Organization (IOM) and its certifying States; select six trainees for the traineeships under the training programmes offered by India and the Russian Federation, and to examine the training programme offered by Germany.

The Panel approved the training programmes offered by China and the Interoceanmetal Joint Organization and its certifying States after certain modifications were made, and the contents of a new draft note verbale announcing the eight traineeships under those programmes.

Five candidates were selected by the Panel for the traineeships under the training programmes offered by India and the Russian Federation. In the absence of a qualified candidate in chemical engineering offered under the training programme of India, it was decided to defer that traineeship and to circulate a new note verbale inviting Governments to nominate candidates.

The Panel reviewed the training programme offered by Germany and was of the view that further details were required on the type of training to be offered and the disciplines involved. It requested that the programme be revised to conform to the format of the programmes which had already been adopted.

A report was submitted on the implementation of the French training programme. The Panel took note of the information provided by the delegation of France.

The Panel would like to thank you and the Preparatory Commission for the opportunity to assist in the implementation of the obligations of the pioneer investors.

Mr. José Luis Jesus
Chairman of the Preparatory Commission
for the International Seabed Authority
and for the International Tribunal
the Law of the Sea
Kingston, Jamaica

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Yours sincerely,

Signed in Kingston, Jamaica on 26 March 1993

1. BJORLYKKE, Arne - Norway
2. DIENE, Baidy - Senegal
3. FLUCKIGER, Marco - Chile
4. GLOUMOV, Ivan - Russian Federation
5. GONY, Jean-Noël - France
6. GORALCZYK, Wojciech - Poland
7. JIN, Xianglong - China
8. KAMALIPOUR, Medhi - Islamic Republic of Iran
9. NAKAO, Seizo - Japan
10. NAWAB, Zohair - Saudi Arabia
11. RAO, J. V. R. - India
12. SADIQUI, Mohamed - Morocco
13. BAENA SOARES, Rodrigo de Lima for Marcus Aguiar GORINI - Brazil
14. BETAH, Sona Samuel for Nkwelle EKANEY - Cameroon
15. MAHJOUBI, Habib for Abderrahman TOUHAMI - Tunisia
16. MARSICO, Osvaldo Narsico for Franciso NULLO - Argentina
17. NAQVI, Tauquir Husain for Abul FARAH - Pakistan
18. BALLAH, Lennox (Chairman of Special Commission 2) ex officio member of the Training Panel
19. AHN, Jung-Ho - Republic of Korea (Absent)
20. HALBACH, Peter - Germany (Absent)
21. TCHOTA, Augustin - Togo (Absent)
22. WEBER, Leopold - Austria (Absent)

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## REPORT OF THE FOURTH MEETING OF THE TRAINING PANEL

1. At its first meeting, held on 22 March 1993, the Training Panel decided to adopt the following agenda for its fourth meeting:

(a) Selection of six candidates for the traineeships under the training programmes offered by India and the Russian Federation;

(b) Review of the training programme submitted by China;

(c) Review of the training programme submitted by the Interoceanmetal Joint Organization (IOM) and its certifying States;

(d) Review of the training programme submitted by Germany;

(e) Progress report on the implementation of the French training programme;

(f) Any other matters.

### Selection of six candidates for the traineeships under the training programmes offered by India and the Russian Federation

2. The Panel reviewed a total of 32 applications for the six traineeships under the training programmes offered by India and the Russian Federation, i.e., three traineeships under the training programme of India (mining geology, exploration geophysics and chemical engineering) and three traineeships under the training programme of the Russian Federation (marine geology, marine geophysics and marine ecology), as well as five late submissions that were only received one or two weeks before the meeting of the Preparatory Commission. The Panel decided that it would only consider the late submissions if there were an insufficient number of qualified candidates among those who had submitted their applications on time. Only one late application met that criteria. The Panel decided to preselect on the basis of the same criteria it had followed in the selection process for the French and Japanese training programmes at its last meeting in New York, namely academic qualifications, age and language (document LOS/PCN/BUR/R.17, para. 3), taking into account any relevant training which was undertaken by the applicant. The Panel had at its disposal two documents prepared by the Secretariat: (1) LOS/PCN/TP/1992/CRP.14, containing a synopsis of the applications submitted; and (2) an informal paper containing the explanatory notes of the applicants and those of the nominating Governments in the original language of submission; as well as the complete file of each applicant. The Panel found that 22 applicants fulfilled the criteria mentioned above. These applicants consisted of 9 applicants from 5 African countries; 12 applicants from 4 Asian countries; and 1 applicant from 1 country from the Latin American and Caribbean region. The Panel would like to draw the attention of nominating Governments to the fact that the choice of the most suitable candidates was a difficult one as all of the applicants were of a high standard.

3. Having reviewed the applications for the traineeship in chemical engineering under the training programme offered by India, the Panel found that none of the applicants were sufficiently qualified and that the traineeship in that discipline would need to be deferred until a suitable candidate could be selected at the next meeting of the Panel. It was decided to announce that traineeship in a new note verbale. The draft note verbale which was approved by the Panel is contained in document LOS/PCN/BUR/R.28.

4. The Panel decided that in the second stage of the selection process, i.e., selecting five trainees from the remaining 22 applicants, it would focus on the other criteria which it had used in the selection process at its last meeting in New York, namely professional experience, reasons for seeking training and how the training would benefit the nominating Government, and then rank the applicants according to how they fulfilled those criteria. Having selected the most qualified applicant for each traineeship, the Panel, in accordance with the decision it had taken at the second meeting at Kingston (LOS/PCN/BUR/R.15, para. 25), reviewed the geographical distribution of those applicants who had also met the requirements of the second stage.

5. Based on this procedure, the Panel selected two candidates from two African countries, one candidate from one country from the Latin American and the Caribbean region and two candidates from one Asian country. The names of the candidates and their countries of origin are contained in document LOS/PCN/BUR/R.26. The Panel recommends these candidates for designation by the Preparatory Commission in respect of the traineeships under the training programmes offered by India and the Russian Federation.

6. With regard to its future procedure for the selection of candidates, the Panel emphasized that unless nominations are accompanied by all the required documentation, they will not be considered. Nominating Governments are requested to include an explanatory note as to how the expert services acquired as a result of the training programme would benefit the State.

7. The Panel decided that those applicants who were not selected for the traineeships under the training programmes offered by India and the Russian Federation would not be considered for the traineeships under the training programmes offered by China and the Interoceanmetal Joint Organization unless they met the minimum criteria and their files were resubmitted. Governments are advised that should they wish to nominate the same applicants for the new traineeships being offered they would need to resubmit the files.

Review of the training programme submitted by China

8. With regard to the training programme submitted by China (LOS/PCN/TP/1993/CRP.13), the Panel was of the view that, in accordance with the decision it had taken at the second meeting, namely that applicants must possess either a postgraduate degree in science, a degree in engineering or a recognized diploma (LOS/PCN/BUR/R.15, para. 14), the academic requirements in the Chinese programme would need to be revised. It was also proposed that the fourth stage of the traineeship in metallurgical engineering should contain the same requirement as the traineeships in marine geology and marine geophysics, namely that based on the training of the previous stages, the trainee will be required to select a topic for research and prepare a detailed report in the training centre. The training programme was revised accordingly and is contained in document LOS/PCN/TP/1993/CRP.13/Rev.1.

9. The Panel adopted the revised training programme, which offers four traineeships:

Marine geology (one);

Marine geophysics (one);

Metallurgical engineering (two).

The training period is approximately 11 months beginning in March 1994.

## Review of the training programme submitted by the Interoceanmetal Joint Organization and its certifying States

10. In its review of the training programme submitted by the Interoceanmetal Joint Organization and its certifying States, the Panel expressed the view that it would be desirable to specify where, when and how long each trainee would spend at the various institutes. A need was also expressed for better coordination of the conduct of the training in several institutes. Another proposal for revision related to the academic qualifications required for the traineeship in marine ecology.

11. Pursuant to the above requests, a revised programme was submitted by the Interoceanmetal Joint Organization and its certifying States (LOS/PCN/TP/1993/CRP.12/Rev.1). The Panel adopted the revised programme, which offers four traineeships

Geophysics (one);

Marine ecology (one);

Metallurgical engineering (two).

The training period is approximately 10 months and begins between September and November 1994.

12. The contents of a draft note verbale announcing the traineeships under the training programmes offered by China and the Interoceanmetal Joint Organization and its certifying States were approved by the Panel. That draft note verbale has been issued as document LOS/PCN/BUR/R.27.

## Training Programme offered by Germany

13. The Panel expressed its appreciation for the training programme presented by Germany (LOS/PCN/TP/1993/CRP.15), in response to step 1, paragraph (c), of document LOS/PCN/SCN.2/L.7 which states that "During the same period that nominations are being taken, the secretariat will make inquiries with other technologically advanced States about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments, so that further use can be made of the information on eligible persons submitted by nominating Governments".

14. In its consideration of the training programme presented by Germany, which offers training for up to four successful applicants, the Panel was of the view that it would be more desirable for the programme to be reorganized so as to conform to the format of the training programmes which had already been adopted by the Panel. It was pointed out that more details were required on the type of training to be offered and the disciplines involved. It was also noted that the age limit in the German programme would need to be revised from 35 to 40 in order to conform with the criteria established by the Training Panel at its second meeting (LOS/PCN/BUR/R.15, para. 16). The German authorities were furthermore requested to consider whether courses could also be taught in English. The delegation of Germany informed the Panel that the comments which were made by the Panel would be brought to the attention of Professor Halbach (the German expert on the Training Panel) and that a more detailed programme would be submitted at the next meeting of the Panel.

15. Pursuant to the request of the Panel at the last meeting in New York, to inquire whether the German authorities would allow trainees from other

industrialized countries to participate in the training programme (LOS/PCN/BUR/R.17, para. 15), the delegation of Germany informed the Panel that inquiries had been made and that trainees from other industrialized countries could participate in the programme at their own expense.

16. In accordance with step 1, paragraph (c) of LOS/PCN/SCN.2/L.7, the Panel requested the Division for Ocean Affairs and the Law of the Sea to make inquiries with other technologically advanced States and institutions about educational and training facilities in areas relevant to seabed and ocean exploration, including those relating to the monitoring of deep seabed environments, and to submit this information for the consideration of the Panel at its next meeting.

## Progress report on the implementation of the French training programme

17. The delegation of France submitted a report on the implementation of the French training programme (LOS/PCN/TP/1993/CRP.16). The Panel was informed that Mr. Ahmed Braham (Tunisia) is presently undergoing training and will complete his training in June 1993. The other two trainees, Mr. Kaiser Gonçalvez de Souza (Brazil) and Mr. Mamadou Ndiaye (Senegal), will begin their training in October of this year and complete it in August 1994. The Panel took note of the fact that Mr. Braham's training period was only of 10 months' duration.

18. The Panel requested that registered pioneer investors adhere to the programmes which were approved by the Panel, except for minor adjustments. It was of the view that those candidates which have already been selected should also adhere to the programme as approved by the Panel.

## Programme of work for the fifth meeting of the Training Panel

19. The programme of work will be as follows:

(i) Selection of one trainee for the traineeship in chemical engineering under the training programme offered by India;

(ii) Selection of eight trainees for the traineeships under the training programmes offered by China and the IOM and its certifying States;

(iii) Examination of the revised training programme of Germany, with a view to circulating a note verbale announcing its programme;

(iv) Consideration of the progress reports on the training programmes being implemented;

(v) Consideration of the progress report of the Secretariat regarding inquiries from other technologically advanced States and institutions about educational and training facilities in areas relevant to seabed and ocean exploration;

(vi) Consideration of the format of the training certificates to be issued to trainees by the Preparatory Commission. A draft will be submitted by the Secretariat at the next meeting;

(vii) Other matters.

20. The Panel decided that it would need to meet for one week. It requested its Coordinator to consult with the Chairman of the Preparatory Commission on the question of when and where the next meeting of the Panel would take place and who would pay for the expenses of the experts in the event that there was no meeting of the Preparatory Commission and they were therefore not attached to their delegations.

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# SELECTION OF CANDIDATES BY THE TRAINING PANEL FOR DESIGNATION BY THE PREPARATORY COMMISSION IN RESPECT OF THE TRAINEESHIPS UNDER THE TRAINING PROGRAMMES OFFERED BY CHINA AND THE INTEROCEANMETAL JOINT ORGANIZATION AND ITS CERTIFYING STATES AND IN RESPECT OF THE TRAINEESHIP IN CHEMICAL ENGINEERING UNDER THE TRAINING PROGRAMME OFFERED BY INDIA

1. The present document contains a report on the process utilized by the Training Panel to select candidates for the nine traineeships under the training programmes offered by China, the Interoceanmetal Joint Organization (IOM) and its certifying States and India, i.e., four traineeships under the training programme offered by China (one in marine geology, one in marine geophysics and two in metallurgical engineering); four traineeships under the training programme offered by IOM and its certifying States (one in geophysics, one in marine ecology, and two in metallurgical engineering); and one traineeship in chemical engineering under the training programme offered by India, and the names of the candidates selected and recommended for designation by the Preparatory Commission in respect of the above traineeships. The Panel would like to draw the attention of nominating Governments to the fact that the choice of the most suitable candidates was a difficult one since there were not very many applicants.

2. The Training Panel reviewed a total of 16 applications, which included two late submissions. The Panel had at its disposal two documents prepared by the Secretariat, (1) LOS/PCN/TP/1994/CRP.19 containing a synopsis of the applications submitted; and (2) an informal paper containing the explanatory notes of the applicants and those of the nominating Governments in the original language of submission; as well as the complete file of each applicant.

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3. It was noted by the Panel that there were no applicants for the traineeship in marine ecology, only three applicants for the four traineeships in metallurgical engineering and only one applicant for the traineeship in chemical engineering. Following a review of those applications, the Panel decided that it needed to modify the age criterion, which had been established by Special Commission 2 in "Implementation of the Preparatory Commission Training Programme. Recommendations of Special Commission 2" (LOS/PCN/SCN.2/L.7), i.e., nominees should be no older than 40 years of age, in order to allow for the selection of a second candidate of 41 years of age for the traineeship in metallurgical engineering offered under the training programme of China. In the absence of a second candidate for the two traineeships in metallurgical engineering offered under the training programme of IOM and its certifying States and in view of the fact that there was not one applicant for the traineeship in marine ecology, the Panel requested that registered pioneer investor to consider transferring those two traineeships to two in geophysics. IOM and its certifying States agreed to revise their training programme in order to be able to accept three trainees in geophysics and one trainee in metallurgical engineering.

4. The Panel preselected nine applicants for the traineeships in marine geology, marine geophysics and geophysics, on the basis of the same criteria it had followed in previous meetings, namely academic qualifications, age and language, taking into account any relevant training which the applicant undertook. Among the applicants four were from two African countries and five were from three Asian countries.

5. In the second stage of the selection process, i.e., selecting four candidates from the remaining nine applicants, the Panel decided that it would focus on the other criteria which it had followed in its previous selection processes, namely professional experience, reasons for seeking training and how the training would benefit the nominating Government, and then rank the applicants according to how they fulfilled those criteria. Having selected the most qualified applicant for each traineeship, the Panel, in accordance with the decision it had taken at the second meeting at Kingston (LOS/PCN/BUR/R.15, para. 25), reviewed their geographical distribution.

6. The Panel selected the following candidates for the traineeships under the training programme of China:

(a) Marine geology

Mr. Mourad Kelkal (Algeria)

The alternate for the above candidate is Mr. Tai-Ho Kwon (Republic of Korea).

(b) Marine geophysics

Mr. Ibrahim Sarour Balla (Sudan)

There is no alternate for the above candidate.

(c) Metallurgical engineering

Ms. Natalya Chigrinova (Belarus)

Mr. Kyung-Soo Choi (Republic of Korea)

There are no alternates for the above candidates.

7. The Panel selected the following candidates for the traineeships under the training programme offered by IOM and its certifying States:

(a) Geophysics

Mr. Jong-Nam Kim (Republic of Korea)

Mr. Arif Hussain (Pakistan)

Mr. Ali Ibrahim Ahmed (Sudan)

There are no alternates for the above candidates.

(b) Metallurgical engineering

Mr. Alexandr Shevchyonok (Belarus)

There is no alternate for the above candidate.

8. The Panel selected the following candidate for the one traineeship in chemical engineering under the training programme offered by India:

Mr. Saad M. Ielea (Iraq)

There is no alternate for the above candidate.

9. In accordance with paragraph 3.1.3 (d) of the Draft Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme (LOS/PCN/SCN.2/L.6/Rev.1), the Training Panel herewith recommends the above candidates for designation by the Preparatory Commission for the traineeships under the training programmes offered by China, IOM and its certifying States and India.

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PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
Twelfth session
Kingston, 7-11 February 1994

# REPORT OF THE FIFTH MEETING OF THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

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## LETTER OF TRANSMITTAL

Dear Mr. Chairman,

In accordance with paragraph 3.1.2 of the Draft Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme (LOS/PCN/SCN.2/L.6/Rev.1), we the members of the Training Panel met from 7 to 9 February 1994 in Kingston, Jamaica to select eight trainees for the traineeships under the training programmes offered by China and the Interoceanmetal Joint Organization (IOM) and its certifying States, as well as one trainee for the traineeship in chemical engineering under the training programme offered by India; to consider the progress reports on the training programmes being implemented; to examine the revised training programme offered by Germany; to receive information regarding inquiries from other technologically advanced States and institutions about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments; and approve the format of the training certificate to be issued to the trainees by the Preparatory Commission. The Panel also considered the implications of entry into force of the United Nations Convention on the Law of the Sea for the Preparatory Commission Training Programme.

In the absence of the Chairman of the Training Panel, Mr. Baïdy Diène from Senegal, the Panel requested Mr. Samuel Sona Betah, who is replacing the expert from Cameroon, Mr. Nkwelle Ekaney, to serve as Acting Chairman for the fifth meeting.

The attention of the Chairman of the Preparatory Commission is drawn to the fact that in the light of the imminent entry into force of the United Nations Convention on the Law of the Sea, the Panel tried to discharge as much of its mandate as it could. At the next session of the Preparatory Commission, the Panel will in its final report to the General Committee make recommendations on those issues which will be outstanding at the time of entry into force and will require consideration by the International Seabed Authority.

With regard to the selection of candidates for the traineeships offered under the training programmes of China, IOM and its certifying States and India, the Panel, in spite of the limited number of applicants for those traineeships, was able to select all the necessary candidates, after IOM and its certifying States agreed to convert the traineeship in marine ecology and one traineeship in metallurgical engineering into two traineeships in geophysics.

H.E. José Luis Jesus
Chairman of the Preparatory Commission
  for the International Seabed Authority
  and for the International Tribunal
  the Law of the Sea
Kingston, Jamaica

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The Panel took note of the reports presented by France, Japan, India and the Russian Federation on the implementation of their training programmes.

The Panel approved the revised training programme offered by Germany. It also received information on the training programme of the International Ocean Institute.

The Panel approved the format of the training certificate to be issued by the Preparatory Commission to the trainees.

The Panel would like to thank you and the Preparatory Commission for the opportunity to assist in the implementation of the obligations of the registered pioneer investors.

Yours sincerely,
Signed in Kingston, Jamaica on 9 February 1994

1. BJORLYKKE, Arne - Norway
2. GLOUMOV, Ivan - Russian Federation
3. JIN, Xianglong - China
4. KAMALIPOUR, Mehdi - Islamic Republic of Iran
5. NAKAO, Seizo - Japan
6. NAWAB, Zohair - Saudi Arabia
7. TOUHAMI, Aberrahman - Tunisia
8. BETAH, Sona Samuel - Cameroon
   for Nkwelle EKANEY
9. CAUSERET, Charles - France
   for Jean-Noël GONY
10. MADEJ, Marek - Poland
    for Wojciech GORALCZYK
11. MARTINEZ PANDIANI, Gustavo - Argentina
    for Francisco NULLO
12. MOURAO SA, Luiz G.B. - Brazil
    for Marcus Aguir GORINI
13. RAO, Bhimsen - India
    for J. V. R. RAO
14. SÜSSDORF, Erich - Germany
    for Peter HALBACH

/...

15. ULLAH, Naimat for Abul FARAH - Pakistan

16. BALLAH, Lennox (Chairman of Special Commission 2), ex officio member of the Training Panel

17. AHN, Jung-Ho - Republic of Korea (Absent)

18. DIENE, Baïdy - Senegal (Absent)

19. FLUCKIGER, Marco - Chile (Absent)

20. SADIQUI, Mohamed - Morocco (Absent)

21. TCHOTA, Augustin - Togo (Absent)

22. WEBER, Leopold - Austria (Absent)

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## REPORT OF THE FIFTH MEETING OF THE TRAINING PANEL

1. The programme of work for the fifth meeting was contained in paragraph 19 of the report of the fourth meeting of the Training Panel to the General Committee of the Preparatory Commission (LOS/PCN/BUR/R.29). In view of the imminent entry into force of the United Nations Convention on the Law of the Sea, the Panel decided to also add the following item to its programme of work:

> "Implications of the entry into force of the United Nations Convention on the Law of the Sea on 16 November 1994 for the Preparatory Commission Training Programme: recommendations of the Training Panel to the General Committee".

### Selection of trainees

2. Having reviewed 16 applications for the eight traineeships offered under the training programmes of China and the IOM and its certifying States, and for the one traineeship in chemical engineering offered under the training programme of India, the Panel decided that, since there were not enough applicants for the traineeships in metallurgical engineering and no applicant for the traineeship in marine ecology offered under the training programme of IOM and its certifying States, the training programme would need to be adjusted to accommodate three traineeships in geophysics and only one in metallurgical engineering. IOM and its certifying States agreed to revise their programme accordingly. Thus for the nine traineeships offered under the programmes of China, IOM and its certifying States and India, the Panel was able to select three candidates from two African countries, four candidates from three Asian countries, and two candidates from one Eastern European country. The names of the candidates and their countries of origin, as well as a report on the selection process, are contained in document LOS/PCN/BUR/R.36.

3. Considering the insufficient number of qualified candidates for most of the traineeships, which made it impossible to select alternates for the candidates selected, and also bearing in mind that the Chinese training programme is scheduled to begin in the middle of May 1994, the Panel would like to emphasize that it is very important for the selected candidates to promptly inform the relevant registered pioneer investor which is offering the training whether or not they will participate in the training programme. The selected candidates will therefore need to be informed of their selection as soon as possible.

### Progress report on the training programmes being implemented

4. The delegation of France submitted a written report on the implementation of the French training programme (LOS/PCN/TP/1994/CRP.20). The Panel was informed that Mr. Ahmed Braham (Tunisia) had completed his training in September 1993. The delegation of France has attested to the completion of that traineeship in a letter addressed to the Chairman of the Preparatory Commission for submission to the General Committee (LOS/PCN/136). The other two trainees, Mr. Kaiser Gonçalvez de Souza (Brazil) and Mr. Mamadou Ndiaye (Senegal), started their training in October 1993 and were currently covering the theoretical aspects of their traineeship.

5. The delegation of Japan reported that the three trainees selected by the Panel for the training programme, Mr. Pramuan Kohpina (Thailand),

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Mr. Eu-Dug Hwang (Republic of Korea) and Mr. Mahmoud Mohammad-Taheri (Islamic Republic of Iran), would complete their training in February 1994.

6. The delegation of India reported that the two trainees selected by the Panel at its last meeting, Mr. Khalid Abdullah Kadi (Saudi Arabia) and Mr. Kwame Odame Boamah (Ghana), had commenced their training in October 1993 and completed an orientation course and related practical training.

7. The delegation of the Russian Federation reported that only two of the trainees selected by the Panel at its last meeting, had presented themselves for the training programme. Mr. Samir A. Mutwalli (Saudi Arabia) and Mr. Juan Lorenzo Diaz Naveas (Chile) had commenced their training in October and November 1993, respectively, and have completed the general orientation course, and were currently receiving theoretical and practical training in their respective disciplines. The other trainee, Mr. Thomas M. Munyao (Kenya), who was selected by the Panel for the traineeship in marine geology and scheduled to commence his training on 1 October 1993, did not respond to the notifications which were sent to him by the Russian Federation. Since the deadline for the commencement of the training was now long past, the Russian Federation could grant no further postponement of that traineeship.

8. The Panel took note of the information provided by France, Japan, India and the Russian Federation. It pointed out however that in the future every registered pioneer investor should, like France, submit a report on the implementation of its training programme in writing, in order to facilitate a review of the information provided and an examination of whether the training was being carried out in conformity with the programmes that were approved by the Panel.

### Format of the training certificate

9. Following a review of the draft certificate prepared by the Secretariat, the Panel decided that a reference to the institutions giving training should be included in the certificate to be issued to the trainees by the Preparatory Commission. It also agreed that the certificate should be issued in the language of the trainee, if it was one of the six official languages of the United Nations.

10. Noting that France had prepared an attestation for Mr. Braham upon completion of his training programme, the Panel pointed out that registered pioneer investors were free to issue attestations for the training they provided and that in fact the trainee would benefit from such a document. It was emphasized that the certificate to be issued by the Preparatory Commission would certify that the training had been carried out in accordance with the training programme approved by the Panel. In this connection it was decided that the trainee would only receive a certificate after the Panel had evaluated the report presented by the trainee upon completion of the training programme and the report of the registered pioneer investor on the trainee.

### Training programmes of non-registered pioneer investors

11. Both the International Ocean Institute (IOI) and Germany have submitted training programmes under step 1, paragraph (c), of document LOS/PCN/SCN.2/L.7, which states that "During the same period in which nominations are being taken, the secretariat ... should also be asked to make inquiries with other

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technologically advanced States about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments, so that further use can be made of the information on eligible persons submitted by nominating Governments".

12. IOI first introduced its training programme at the end of the first meeting of the Panel (see LOS/PCN/BUR/R.9, paragraph 11) and submitted its written proposal at the conclusion of the fourth meeting (LOS/PCN/TP/1994/CRP.18). The training programme provides for two five-week courses (one in China in October 1993, and one in India in August 1994) on the organizational, financial and economic management of deep-sea mining operations. The course offers an introduction to the United Nations Convention on the Law of the Sea, the work of the Preparatory Commission, and the Pioneer Regime. It focuses on the joint exploration of a first mine site for the Enterprise and examines the state of the art technologies required for exploration, exploitation, processing, and environmental and economic impact assessment. It deals with the acquisition, management, and development of high technologies in developing countries in their scientific/technological, economic, social, and environmental aspects.

13. The Chairman of the IOI, Professor Elisabeth Mann Borgese, reported that from the list of applicants not selected for the French, Japanese, Indian and Russian training programmes seven were chosen by the Institute together with six Chinese candidates to take part in the first five-week course which was held in China in cooperation with the China Ocean Mineral Resources Research and Development Association (COMRA). Upon completion of their training, the participants prepared a report and were issued certificates by IOI. The next course would be held in India in cooperation with the Indian Institute of Technology, and the training programmes of the IOI would continue on an annual basis. The Panel expressed its appreciation to Professor Mann Borgese for her untiring efforts over the years to train people from different parts of the world in the area of deep seabed mining.

14. The Panel approved the training programme of Germany (LOS/PCN/TP/1994/CRP.21), which at its fourth meeting it indicated should be revised to conform to the format of the training programmes already adopted by detailing the type of training to be offered and the disciplines involved, as well as raising the age limit to 40. The training programme offers training to four trainees for a period of 18 months beginning in November 1994. The Panel expresses its appreciation to the Government of Germany for its training programme.

15. The German training programme on deep seabed minerals and mining covers a broad spectrum of disciplines and is intended to convey a broad knowledge of all matters related to the use of non-living resources, including their economic and social aspects, and the environmental protection thereof. Trainees will in particular be trained in the management of deep seabed minerals. The programme also provides for a six-month German language course. The details of the training programme are contained in document LOS/PCN/TP/1994/CRP.21.

16. With regard to the selection of the four trainees for the above training programme, the Panel requested the secretariat to make available to the Government of Germany all the applications which had been submitted for the training programmes offered by the registered pioneer investors in order to give

it the opportunity to select trainees from among those applicants if it so wishes.

17. With regard to the results of the secretariat's inquiries with other technologically advanced States and institutions about educational and training facilities in areas relevant to seabed or ocean exploration, including those relating to the monitoring of deep seabed environments, the Panel took note of the fact that from the list of other technologically advanced States which had been drawn up by the members of the Training Panel, i.e., Australia, Belgium, Canada, Denmark, Finland, Italy, New Zealand, Norway, Sweden, Netherlands, Ukraine, United Kingdom and United States of America, only Finland had replied.

18. The Panel expresses its appreciation to the Government of Finland for its response. In the light of the imminent entry into force of the Convention, it is not possible for the Panel to pursue this matter at the current stage, and it therefore recommends that the Authority take up this issue in the future. In the meantime, the secretariat is requested to continue updating the information from the technologically advanced States that were contacted.

## Implications of entry into force of the Convention

19. In view of the imminent entry into force of the Convention, the Panel decided to submit a final report to the General Committee at the next session of the Preparatory Commission. The report will describe what has been accomplished by the Panel and what remains outstanding at the time of entry into force and requires consideration by the Authority. All documentation relating to the work of the Panel will be annexed to the final report.

20. A draft final report will be prepared by the secretariat and circulated intersessionally to all members of the Panel for their comments. A revised draft will then be presented at the sixth meeting of the Training Panel for adoption and submission to the General Committee of the Preparatory Commission.

21. The programme of work for the sixth meeting of the Training Panel will be as follows:

(i) Adoption of the final report of the Training Panel for submission to the General Committee;

(ii) Evaluation of the progress reports of the registered pioneer investors; evaluation of the reports of the trainees who have completed their training; recommendation to the Preparatory Commission for the issuance of training certificates.

22. The Panel decided that it would need to meet for three days during the next session of the Preparatory Commission.

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PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA
New York, 1-12 August 1994

# REPORT OF THE SIXTH MEETING OF THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

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## LETTER OF TRANSMITTAL

Dear Mr. Chairman,

In accordance with paragraph 3.1.2 of the Draft Principles, Policies, Guidelines and Procedures for a Preparatory Commission Training Programme (LOS/PCN/SCN.2/L.6/Rev.1), we, the members of the Training Panel, met four times on 1, 2 and 5 August 1994 in New York, to approve the final report of the Training Panel to the General Committee of the Preparatory Commission; evaluate the progress reports of the registered pioneer investors; evaluate the reports of the trainees who have completed their training and the reports of the registered pioneer investors on those trainees; and recommend to the Preparatory Commission the issuance of training certificates to the trainees.

In the absence of the Chairman of the Training Panel, Mr. Baïdy Diène (Senegal), Mr. Samuel Sona Betah, in place of the expert from Cameroon, Mr. Nkwelle Ekaney, served as Acting Chairman for the sixth meeting.

The Panel evaluated the training received by Mr. Kohpina from Thailand, Mr. Hwang from the Republic of Korea, and Mr. Mohammad-Taheri from the Islamic Republic of Iran under the training programme of Japan; and the training received by Mr. Braham from Tunisia under the training programme of France. On the basis of the reports presented, the Panel established that the training had been carried out in accordance with the training programmes that had been approved by the Panel. It therefore recommends to the Preparatory Commission the issuance of training certificates to Mr. Kohpina, Mr. Hwang, Mr. Mohammad-Taheri and Mr. Braham.

In addition to the reports presented by Japan and France, the Panel took note of the report presented by the Russian Federation on the completion of the traineeships by the two trainees who received training under the programme. The reports of the trainees have not yet been submitted. The Panel also took note of the information provided by India on the completion of the traineeships by two of the three trainees who received training under the programme, and the reports of the trainees on the training they received. India informed the Panel that the Department of Ocean Development would submit its report on the trainees in due time. It was also reported that the third trainee would commence his training in October 1994.

The Panel also took note of the progress report on the implementation of the training programme by China. The Interoceanmetal Joint Organization informed the Panel that it would commence its training programme as scheduled on 28 October 1994.

H.E. José Luis Jesus
Chairman of the Preparatory Commission
for the International Seabed Authority
and for the International Tribunal for
the Law of the Sea
New York

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The representative of the International Ocean Institute provided information on its training programme.

The Panel was informed that the Intergovernmental Oceanographic Commission would like to cooperate with the Preparatory Commission and the Authority in training experts for the Authority, particularly in the light of its scientific and technical needs in the field of marine sciences.

The Training Panel adopted its final report for submission to the General Committee.

We would like to thank you and the Preparatory Commission for having had the opportunity to assist in the implementation of the obligations of the registered pioneer investors.

Yours sincerely,
Signed in New York, on 5 August 1994

1. AHN, Jung-Ho - Republic of Korea

2. GLOUMOV, Ivan - Russian Federation

3. KAMALIPOUR, Mehdi - Islamic Republic of Iran

4. NAKAO, Seizo - Japan

5. BETAH, Samuel Sona - Cameroon
   for Nkwelle EKANEY

6. CAUSERET, Charles - France
   for Jean-Noël GONY

7. JIANCAI, Jin - China
   for Xianglong JIN

8. KOTLINSKI, Ryszard - Poland
   for Wojciech GORALCZYK

9. MAURAO SA, Luiz G. B. - Brazil
   for Marcus Aguir GORINI

10. NAQVI, Tauquir Hussain - Pakistan
    for Abul FARAH

11. RAO, Bhimsen - India
    for J. V. R. RAO

12. TAYEB, Saleh - Saudi Arabia
    for Zohair NAWAB

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13. BALLAH, Lennox (Chairman of Special Commission 2), *ex officio* member of the Training Panel

14. BJORLYKKE, Arne - Norway (Absent)

15. DIÈNE, Baïdy - Senegal (Absent)

16. FLUCKIGER, Marco - Chile (Absent)

17. HALBACH, Peter - Germany (Absent)

18. NULLO, Francisco - Argentina (Absent)

19. SADIQUI, Mohamed - Morocco (Absent)

20. TCHOTA, Augustin - Togo (Absent)

21. TOUHAMI, Aberrahman - Tunisia (Absent)

22. WEBER, Leopold - Austria (Absent)

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## REPORT OF THE SIXTH MEETING OF THE TRAINING PANEL

1. The programme of work for the sixth meeting was contained in paragraph 21 of the report of the fifth meeting of the Training Panel to the General Committee of the Preparatory Commission (LOS/PCN/BUR/R.37). The Panel decided to first consider the second item of its programme of work.

### Completion of training programmes: evaluation of reports

2. The delegation of Japan submitted a written report (LOS/PCN/TP/1994/CRP.24) on the training received by the three trainees under the training programme of Japan. It also sent to the Secretariat copies of the certificates that had been issued to the three trainees upon completion of their traineeships. Each of the three trainees selected by the Panel for the training programme, Mr. Pramuan Kohpina (Thailand), Mr. Eu-Dug Hwang (Republic of Korea) and Mr. Mahmoud Mohammad-Taheri (Islamic Republic of Iran) completed his training in February 1994 and has submitted a report on the training he received (LOS/PCN/TP/1994/CRP.25). Each of the three trainees also wrote one part of a tentative instruction manual for a survey of manganese nodule deposits entitled "Geology and prospecting of manganese nodules". A copy of that comprehensive manual was given to the Secretariat for transfer to the Authority.

3. Following an evaluation of the training received by Mr. Kohpina in geology, Mr. Hwang in geophysics and Mr. Mohammad-Taheri in electronic engineering, the Panel decided that the training had been carried out in accordance with the programme that had been approved by the Panel. The Panel therefore recommends that the Preparatory Commission issue training certificates to Mr. Kohpina, Mr. Hwang and Mr. Mohammad-Taheri.

4. It may be recalled that during the twelfth session of the Preparatory Commission, in February 1994, the delegation of France had submitted a report on Mr. Ahmed Braham (Tunisia) to the Panel (LOS/PCN/TP/1994/CRP.20) and had attested to the completion of his traineeship in a letter addressed to the Chairman of the Preparatory Commission for submission to the General Committee (LOS/PCN/136). At the sixth meeting of the Panel, the delegation of France in a written report on the training of the three trainees in France (LOS/PCN/TP/1994/CRP.26) gave an outline of the report that Mr. Braham had written on the training he received in France. A copy of Mr. Braham's comprehensive report was given to the Secretariat for transfer to the Authority.

5. Following an evaluation of the training received by Mr. Braham in mining geology and geological data processing under the training programme of France, the Panel decided that the training had been carried out in accordance with the programme that had been approved by the Panel and it could therefore recommend to the Preparatory Commission the issuance of a training certificate to Mr. Braham.

6. The Panel noted that Mr. Braham had not received any training on board a research vessel owing to bad weather conditions. Since registered pioneer investors could be faced with the same problem, the Panel requested them to make provision for the taking of appropriate measures in order to ensure that trainees were given the opportunity to take part in a future expedition at sea.

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7. The delegation of the Russian Federation submitted a written report (LOS/PCN/TP/1994/CRP.29) on the successful completion of the traineeships by Mr. Samir A. Mutwalli (Saudi Arabia) and Mr. Juan Lorenzo Díaz Naveas (Chile) in July 1994. It was pointed out by the Russian Federation that with the completion of the traineeships by the two trainees it had fully discharged its obligation with respect to training. The reports of the trainees would be forwarded to the Secretariat for transfer to the Authority.

8. The delegation of India in its report (LOS/PCN/TP/1994/CRP.27) informed the Panel that two of the three trainees, namely Mr. Khalid Abdullah Kadi (Saudi Arabia) and Mr. Kwame Odame Boamah (Ghana), had completed their training in July 1994. The reports of the trainees on the training they had received in India were presented to the Panel. The delegation of India informed the Panel that the Department of Ocean Development would submit a report on the trainees at a later stage and that it would also issue certificates to the trainees. Copies of that report and the certificates would be sent to the Secretariat. The reports of the trainees were given to the Secretariat for transfer to the Authority.

9. The Panel took note of the reports presented by India and the Russian Federation. It decided that, in the absence of the reports by the trainees who had received training in the Russian Federation, and the report of the Department of Ocean Development on the trainees who had received training in India, it could not proceed with an evaluation of the training received under the training programmes of the Russian Federation and India.

## Format of the reports of the trainees

10. The Panel emphasized that the reason why the trainees had been asked to present a report to the Panel upon the completion of their training was to enable the Panel to verify that the training had been carried out in accordance with the training programme that had been approved by the Panel. It was decided that each trainee should submit an individual report. The report should contain a detailed summary of the training he or she had received. It should state whether the training was satisfactory and whether it covered all of the stages of the traineeship mentioned in the relevant training programme. The reports submitted by the three trainees who had received training in Japan (LOS/PCN/TP/1994/CRP.25) were considered a good example in this regard. The Panel decided that it should not establish a specific format for the presentation of the report, and that the trainees could write their report in any one of the official languages of the United Nations, which could then be translated into all official languages. It was also decided that a copy of the technical report that the trainees prepared on the practical stage of their training would be forwarded by the registered pioneer investor to the Authority.

## Reports of registered pioneer investors on the training programmes being implemented

11. The delegation of France reported (LOS/PCN/TP/1994/CRP.26) that the remaining two trainees, Mr. Kaiser Gonçalvez de Souza (Brazil) and Mr. Mamadou Ndiaye (Senegal), would complete their training on 30 September 1994 and were currently undergoing training on board a research vessel.

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12. The delegation of India reported (LOS/PCN/TP/1994/CRP.27) that the third trainee, Mr. Saad M. Ielea (Iraq), would commence his training in chemical engineering in October 1994.

13. The delegation of China reported (LOS/PCN/TP/1994/CRP.28) that the four trainees, Mr. Mourad Kelkal (Algeria), Mr. Ibrahim Sarour Balla (Sudan), Ms. Natalya Chigrinova (Belarus) and Mr. Kyung-Soo Choi (Republic of Korea), had commenced their training in the middle of May 1994 and were currently undergoing theoretical as well as language training. Practical training on board a research vessel would take place in the middle of August 1994.

14. The representative of the Interoceanmetal Joint Organization (IOM) informed the Panel that there would be no delay in the commencement of its training programme on 18 October 1994 and that IOM was ready to receive the trainees that had been selected at the last meeting of the Panel.

15. The Panel took note of the information provided by France, India, China and the Interoceanmetal Joint Organization.

## Training programmes of non-registered pioneer investors

16. The representative of the International Ocean Institute (IOI), Professor Elisabeth Mann Borgese, informed the Panel that the Institute's five-week training course in India had been postponed from August 1994 until September 1994 and that nominations were still being accepted for the training course. The course was being updated in the light of the adoption of the Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982. IOI's training course focuses on the acquisition, management and development of high technologies in their scientific/technological, economic, social and environmental aspects and the adaptation of those technologies for the sustainable development of the exclusive economic zone. The 1996 course would again be held in China.

17. The representative of the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO) informed the Panel (LOS/PCN/TP/1994/CRP.30) that IOC conducted many programmes in ocean sciences, ocean services and training and mutual assistance (TEMA). IOC provides annually, through its TEMA programme, short-term training fellowships which enable scientists from developing countries to participate in various highly scientific and technical activities in different fields. IOC would like to cooperate with the Preparatory Commission and the Authority in training experts for the Authority, particularly in the light of its scientific and technical needs in the field of marine sciences.

18. The Panel expressed its appreciation to IOC for its offer of training.

## Final report of the Training Panel

19. The Panel approved its final report to the General Committee of the Preparatory Commission (LOS/PCN/BUR/R.48). A draft final report had been prepared by the Secretariat (LOS/PCN/TP/1994/CRP.23) pursuant to a request by the members of the Panel at the fifth meeting and circulated inter-sessionally

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to all members for their comments. The draft final report was then updated in the light of developments that took place at the sixth meeting of the Panel. The annexes to the final report will be reproduced when the report becomes part of the final report of the Preparatory Commission to be presented to the Authority.

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PREPARATORY COMMISSION FOR THE
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New York, 1-12 August 1994

## REPORT OF THE SIXTH MEETING OF THE TRAINING PANEL TO THE GENERAL COMMITTEE OF THE PREPARATORY COMMISSION

### Corrigendum

Page 6, paragraph 8, third sentence

*After* Panel *insert* that the two trainees had completed their training programme successfully and

Page 7, paragraph 14, third line

*For* 18 October 1994 *read* 28 October 1994

Page 7, paragraph 16, last line

*For* 1996 *read* 1995

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best copy available

## Annex IV

## LIST OF DOCUMENTS OF THE TRAINING PANEL NOT INCLUDED IN THE PRESENT REPORT

| | |
|---|---|
| LOS/PCN/TP/1991/CRP.2 | Training programme for the Preparatory Commission of the International Seabed Authority, as required of pioneer investors<br>Proposal submitted by the French delegation<br>[14 August 1991] |
| LOS/PCN/TP/1991/CRP.3 | Information on the training programme<br>Submitted by the delegation of Japan<br>[14 August 1991] |
| LOS/PCN/TP/1991/CRP.4 | Information on the training programme<br>Submitted by the delegation of the Union of Soviet Socialist Republics<br>[15 August 1991] |
| LOS/PCN/TP/1991/CRP.4/Add.1 | Addendum<br>List of specialists for which there will be training, orientation lecture courses and special requirements for candidates<br>[21 August 1991] |
| LOS/PCN/TP/1992/CRP.6 | Training programme for the Preparatory Commission of the International Seabed Authority as required of pioneer investors<br>An outline of the training programme submitted by the delegation of India<br>[19 February 1992] |
| LOS/PCN/TP/1992/CRP.7 | Draft note verbale on the French training programme<br>[24 February 1992] |
| LOS/PCN/TP/1992/CRP.7/Rev.1 | Draft note verbale on the training programmes offered by France and Japan<br>[27 February 1992] |
| LOS/PCN/TP/1992/CRP.9<br>(English only) | Summary sheets of applications submitted for traineeships under the training programmes offered by France and Japan<br>Note prepared by the Secretariat<br>[28 July 1992] |

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|---|---|
| LOS/PCN/TP/1993/CRP.12 | Training Programme for the Preparatory Commission of the International Seabed Authority as required of pioneer investors<br>Proposal submitted by Interoceanmetal Joint Organization and its certifying States<br>[9 February 1993] |
| LOS/PCN/TP/1993/CRP.12/Corr.1<br>(Russian only) | Corrigendum<br>[23 March 1993] |
| LOS/PCN/TP/1993/CRP.13 | Training Programme for the Preparatory Commission of the International Seabed Authority as required of pioneer investors<br>Proposal submitted by the delegation of China<br>[1 March 1993] |
| LOS/PCN/TP/1993/CRP.15 | Proposal for a training programme in the field of deep seabed mining<br>Submitted by the delegation of Germany<br>[22 March 1993] |
| LOS/PCN/TP/1994/CRP.23 | Draft final report of the Training Panel to the General Committee of the Preparatory Commission<br>[25 April 1994] |

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# PART 2

## DOCUMENTS ISSUED AFTER THE TWELFTH SESSION OF THE PREPARATORY COMMISSION

(UP TO MARCH 1995)

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## LETTER DATED 13 FEBRUARY 1995 FROM THE CHAIRMAN OF THE DELEGATION OF FRANCE ADDRESSED TO THE SECRETARIAT OF THE UNITED NATIONS

Please find enclosed a file on the subject of Mr. Kaiser G. de Souza, a Brazilian national, who successfully completed between 3 October 1993 and 30 September 1994 a training programme organized by France and its pioneer investor, IFREMER-AFERNOD, provided for under the understanding on the fulfilment of obligations described in document LOS/PCN/L.87, annex, of 30 August 1990 and adopted on 31 August 1990 by the Preparatory Commission for the International Seabed Authority.

The file consists of the following documents: (a) a report in French, written by Mr. de Souza; (b) a summary of that report, in French and English; and (c) a training certificate issued by the French authorities.

I should be grateful if you would:

(a) Inform the members of the Preparatory Commission of the Authority, and the members of the Training Panel, that this report is available for consultation, given its exceptional importance;

(b) Distribute the summary of the report to the Training Panel as a working document, at least in French and English;

(c) Ensure appropriate distribution, as a working document, of the training certificate issued by the French authorities, as was done in the case of Mr. Braham, a Tunisian national who was trained in France.

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It is, of course, for the secretariat of the Preparatory Commission and the Authority to issue its own certificate to Mr. de Souza in respect of his training course.

(*Signed*) Georges DUQUIN
Head of the French delegation

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## Annex

## CERTIFICATE

The undersigned, Georges Duquin, Deputy Director for the Law of the Sea, Fisheries and Antarctica in the Office of Legal Affairs of the Ministry of Foreign Affairs of the French Republic and Head of the French delegation to the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea, and to the International Seabed Authority, hereby certifies that Mr. Kaiser G. de Souza, of Brazilian nationality, born on 25 July 1958 at Recife (Brazil), successfully completed between 3 October 1993 and 30 September 1994 the training programme organized by France, the certifying State, and the pioneer investor IFREMER-AFERNOD (Institut français de l'exploitation de la mer-Association française d'études et de recherche des nodules), provided for under the understanding on the fulfilment of obligations described in document LOS/PCN/L.87, annex, dated 30 August 1990 and adopted on 31 August 1990 by the Preparatory Commission for the International Seabed Authority. This certification also applies to the statements made below.

After being selected by the Officers of the Preparatory Commission on the recommendation of the Training Panel, Mr. de Souza attended a comprehensive training course in France on mining geology and data processing. The course consisted of two parts, theoretical study and practical application.

The theoretical course took place from 1 October 1993 to 31 March 1994, at the following establishments:

(a) Centre for Higher Education in the Exploration and Exploitation of Mineral Resources (CESEV);

(b) *Ecole nationale supérieure de géologie* (ESNG), in Nancy; Mr. de Souza obtained the Diploma of Higher Specialized Studies (DESS) in "Exploration and Mining Geology", with an average mark of 16/20, placing him in the first third of his class.

Mr. de Souza received instruction in the following subjects:

(a) Mining economics (economics of raw materials, project economics, economics of technology);

(b) Metallogeny;

(c) Ore processing;

(d) Data processing and introduction to geostatistics.

Visits to industrial and mining facilities were organized for Mr. de Souza during this period of study.

The practical part of the training course, in the field of marine geoscience, took place from 1 April to 30 September 1994 at the Institut français de l'exploitation de la mer (IFREMER) in Brest.

The purpose of this course was practical training in mining geology and the application of computer technology to information regarding deep seabed polymetallic nodule deposits.

In this connection, Mr. de Souza took part in the "Zoneco" campaign aboard the vessel Atalante from 2 to 22 August 1994, the purpose of which was the morphobathymetric mapping of part of the exclusive economic zone of New Caledonia.

Mr. de Souza was thus able to study means of prospecting for and exploiting polymetallic nodule deposits, the geological and mining characteristics of these deposits, and the various data-processing resources used in studying them. He put this into practice by designing and creating displays showing the methods and techniques used by IFREMER-AFERNOD.

As a practical exercise, Mr. de Souza drafted a project for the prospecting and evaluation of the polymetallic nodules on the sites reserved for the International Seabed Authority.

Technical experts, as well as the French authorities, have judged Mr. de Souza's report to be an exceptionally valuable contribution to knowledge and to the evaluation of current problems in the area of polymetallic nodules.

During this course, Mr. de Souza showed remarkable aptitude for acquiring knowledge. He was able to apply his high-level professional skills to making a critical appraisal of the methods and data to which he was introduced.

On completion of his training, Mr. de Souza was felt to have demonstrated exceptional professional and human qualities and to have fully attained the objectives of the training designed to give the personnel of the future Authority the best possible qualifications.

(Signed) Georges DUQUIN

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## REPORT ON THE TRAINING RECEIVED UNDER THE TRAINING PROGRAMME OF FRANCE

Summary of the report prepared by Mr. Kaiser G. de Souza (Brazil)

This paper summarizes the various activities carried out during the "Mining Geology and Geological Data Processing" training programme offered by France as a Pioneer Investor with the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea (United Nations Convention on the Law of the Sea).

The training was dispensed first at the "Centre d'Enseignement Supérieur en Exploration et Valorisation des Ressources Minérales" (Centre for Advanced Studies in the Exploration and Development of Mineral Resources) - CESEV (Nancy) from 1 October 1993 to 30 March 1994, and then at the "Institut Français de Recherche pour l'Exploitation de la Mer" (French Research Institute for the Exploitation of the Sea) - IFREMER (Brest) from 1 April to 30 September 1994.

The first part of the training programme involved theoretical courses at CESEV. The course work began with general training and recapitulation of the basics regarding mineral deposits, their classification, the various mining operations, treatment methods and data processing, as well as the analysis of issues linked to economics, tax law and the jurisdiction over mining activities. Afterwards, the issues of exploration and exploitation of various minerals, their economic role, their environment and the tools of the mining geologist were taken up in greater detail.

This coursework provided access to the most advanced know-how and techniques currently existing in mining research and served as a solid basis for the remainder of the training.

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The IFREMER activities began with the preparation of a synthesis of exploration work on polymetallic nodules carried out over the last 25 years by AFERNOD (French Oceanic Nodule Study and Research Association). This synthesis, presented in the form of 19 posters with a detailed explanatory text, was subdivided into five sections:

- The first provides general information on polymetallic nodules: the background of their discovery, their distribution in the oceans, their main physical and chemical characteristics and their origin;
- The second section describes the exploration techniques: platforms, positioning systems, sampling instruments (corers and grabs), visual instruments (continuous and selective sea-bottom photographic systems, video system and the manned "Nautile" submarine) and seismic-acoustic instruments (multibeam echosounder and deep-towed side-scan sonar - SAR). The description of each device includes its operating principle, its application, its use and its advantages and disadvantages;
- The third section deals with the methodology used, the approach strategies, work carried out and the results obtained by AFERNOD during the various phases of exploration. The section presents the knowledge acquired on the nodule fields, essential relief characteristics, the sedimentary layer, topographical obstacles and the metal content and abundance of the polymetallic nodules;
- The fourth section is devoted to mathematical simulation and the various exploitation methods as well as to the principle of the polymetallic nodule mining system studied by AFERNOD. The various metallurgical treatment methods are also described. Particular attention is paid to hydrometallurgical and pyrometallurgical treatment: concentration, refining, manganese treatment and metal yield issues are discussed;
- The fifth section addresses the principles of feasibility of exploitation. Issues regarding the environmental impact of future polymetallic nodule mining, as well as the precautionary measures to be taken to prevent impact risks, are presented. The study of the profitability of a nodule mine carried out by AFERNOD and a brief history of the registration of pioneer investors in the international seabed area are also discussed.

The synthesis also provided an overview of the French polymetallic nodule exploration programme as well as of the feasibility study on future mining operations.

The training programme also included participation in an oceanographic cruise ("ZoNéCo2") conducted in the exclusive economic zone of New Caledonia in the month of August 1994 on board the oceanographic vessel "L'Atalante". This cruise is one of the phases of the French programme to survey the French

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exclusive economic zones. Its main objective was morphobathymetric and geophysical coverage of the region to identify the sectors of greatest economic interest.

Participation in the cruise provided direct contact with the different ocean exploration methods, the oceanophysical measuring instruments and the on-board data-processing systems. It also allowed the acquisition of knowledge essential to the planning of oceanographic cruises: preparation, functioning and data utilization.

The various activities of the training programme carried out at IFREMER ended with an individual assignment: the drafting, as a practical exercise, of a project paper for the exploration and evaluation of the polymetallic nodules in the areas reserved for the International Authority.

These mining areas, located in the Northern Pacific Ocean at an average depth of 5,000 metres, are distributed over a total surface area of 880,000 square kilometres. Since this surface area is too large, exploration operations should begin in zones of recognized economic value. The selection of these zones, as proposed in the project, must be made after inventory, homogenization, critical analysis and validation of the data supplied to the International Authority by the pioneer investors.

Critical analysis and validation of the data are essential in order to gain familiarity with the data and link them to geological interpretations. This allows errors to be corrected at all levels, and is even more important because the data supplied originate from different locations.

Critical analysis of the data should take into consideration an analysis of the various exploration grid systems, the positioning of the data with respect to the grid system, possible systematic errors, the representativeness of the data and the manner in which they were compiled.

The zone selected for this exploration and evaluation project is the one on which the three pioneer investors (IFREMER/AFERNOD, DORD and Yuzhmorgeologiya) have already carried out preliminary work.

A plan of exploration and evaluation operations, based on the work of the three pioneer investors, is proposed. It takes into consideration an estimate of the duration and approximate cost of the operations at sea before and after mining operations begin. It incorporates:

- Several strategies for selection and ranking of the mining fields (polymetallic nodule mining units), their abundance and tonnage of nodules, their content in metals of economic interest and the topography of the sea bed;

- Use of the most effective methods and technologies implemented and tested by the three pioneer investors;

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- The knowledge acquired by IFREMER/AFERNOD in 25 years of polymetallic nodule exploration work, as well as the feasibility study for future mining.

The exploration and evaluation plan is divided into three phases:

- The first, carried out over the entire selected zone, should permit selection of nodule fields and initial elimination of the regions which are without economic interest or difficult of access. This phase, carried out with the help of the multibeam echosounder and Multifrequency Exploration System (MFES), will establish a detailed morphobathymetric map and a map of the nodule distribution on the seabed;
- The second phase of exploration should permit potential mining sites to be located within the nodule fields determined in the preceding phase. These sites will then be ranked in order of economic priority for continued exploration. During this phase, the network of the sampling carried out by the three pioneer investors must be validated and completed for each sector;
- The third phase of exploration will delineate the mining fields within the potential mining sites and provide the knowledge necessary to plan the exploitation. During this phase, the side scan sonar (SAR), the self-propelled free submersible "Epaulard" or alternatively the combined Russian system may be used and selective samples taken.

The plan proposed shows that a total of 53 oceanographic cruises involving 1,838 days of work at sea should reduce the 71,570 km$^2$ exploration area of the zone initially selected to a mining area of 3,400 km$^2$. The delineated mining area, consisting of 113 mining fields, should afford 22.6 years of exploitation at a rate of 2.1 million tons of wet nodules per year.

The work would be executed in two stages, one before and one after the exploitation programme, has been planned. In the first stage, 11 oceanographic cruises, corresponding to 368 days of work at sea, would locate and evaluate 14 mining fields (425 km$^2$) for the first potential mining sites, which represent 2.8 years of exploitation. These 11 oceanographic cruises should also allow an estimate of mineable tonnage and the acquisition of full knowledge regarding the potential mining sites which, integrated with the economic data, should lead to the development of a feasibility study and the planning of an exploitation programme. The cost of the 11 oceanographic cruises would total $18.4 million (about $50,000 per day at sea), or 1.84 per cent of the initial investment scheduled by AFERNOD for the exploitation of polymetallic nodules. Once the feasibility study and the planning of the exploitation programme were complete, and economic and technical conditions permitting, exploitation could begin and exploration operations could be continued.

The second stage of exploration, covering the entire duration of the exploitation programme would include 42 oceanographic cruises, or 1,470 days of

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work at sea, and should locate and evaluate 99 other mining fields (2,975 km$^2$) representing 19.8 years of exploitation. The cost of these 42 cruises, including the operating costs of the exploitation programme would be $73.5 million or 1.48 per cent of forecast annual spending for 19.8 years of polymetallic nodule exploitation.

Allowing for possible incidents (poor weather, technical breakdowns, etc.) which might occur during the oceanographic cruises, it would be advisable to allow a 20 per cent margin in planning the exploration operations at sea, in terms of both time and cost.

The proposed plan thus shows the interest of the zone selected for the future mining of polymetallic nodules. However, before such a plan can be implemented, a few questions regarding project organization must be dealt with.

First, the organization responsible for carrying out the project must be set up and its budget and the technical, financial and know-how contributions by the associated partners defined, and the appropriate data-processing means must also be determined. Above all, the project organization must know "what to do" to complete the project.

Thereafter, the inventory of the technical resources required at sea (ships and on-board equipment) and on land (data-processing centres and specialized analytical laboratories, etc.) must be made. The inventory must indicate where and how to obtain them, their utilization cost (rental or purchase), additional costs in personnel and processing, freight, etc. It must also indicate possible utilization constraints and availability limits.

Then, the computer "architecture" necessary for the project, as well as its investment and operating costs, must be determined. This "architecture" must take into consideration the volume of existing data, as well as of the data to be acquired, the software necessary to process the data, the corresponding hardware as well as the products requested, and it must meet the requirements of all the exploration operations. To this end, scientific software (geostatistics, special processing of geophysical data), computer-assisted drafting and computer-assisted publishing software and a database-management system (DBMS) will be sought in order to obtain the best final result such as, for example, the drawing up of maps of metal content obtained using a Geographic Information System (GIS). The software choice must be made on the basis of technical coherence and compatibility with the research centres with which exchanges may take place.

Finally, the initial investment to be made before exploitation start-up must also be forecast. This investment, basically corresponding to the first four years of project execution, should take into account:

- The cost of personnel managed directly by the project organization;
- Travel expenses;

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- Cost of premises (rent, telephone, electricity, gas, water, maintenance, etc.);
- Office supplies, documentation, subscriptions;
- The acquisition of the information system necessary for project implementation as well as hardware and software maintenance contracts, consumables and subscriptions (telecommunications line for data transfer);
- The acquisition of "subcontracting" of technical means directly implemented by the project organization;
- The cost of operations at sea for 11 oceanographic cruises;
- The cost of processing the data obtained;
- The cost of drawing up the report on feasibility and on the planning of exploitation operations.

To provide additional information for the proposed project, a few problems downstream from exploration are discussed. These relate on the one hand to principles for planning the exploitation operations and on the other to the environmental impact of the future mining of polymetallic nodules and the measures to be taken to reduce or eliminate that impact.

The planning of polymetallic nodule exploitation and the estimation of the investment and operating costs can be fairly precisely defined as soon as exploration operations provide full knowledge of each mining field identified (geometry, environment, metal content, nodule abundance and mechanical and mineralogical properties of the nodules). This knowledge will be particularly important in determining certain technical parameters such as:

- The methods and daily mining rate;
- Whether or not to programme mixing of the yields from the various mining fields;
- The choice of the processing method and the flexibility of the processing plant in absorbing fluctuations in quantity and quality of the mineral ore received;
- The amount of the investment to be made, amortization rate, etc.

The cost of mining is significantly affected by the depth, topography and mechanical properties of the seabed, as well as by the distribution of the nodules; this means that planning necessitates full knowledge of the geometry and environment of the mining fields. The cost of processing depends essentially on the mechanical and mineralogical properties of the nodules as well as on the quality of the finished products.

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Planning must also provide an estimate of the income expected from the sale of the raw materials, whose price is highly sensitive to the imbalance of supply and demand and, increasingly, to speculation on the commodities markets. It is however possible to simulate such price variations and observe the effects on the profitability of an operation.

Mining the polymetallic nodules of the seabed implies a certain amount of responsibility from an ecological point of view, for any mining activity presupposes an environmental impact. The exploration project preceding the mining operations should supply the data necessary to evaluate this impact.

The mining of polymetallic nodules in the area reserved for the International Authority as proposed in this project presupposes that at the end of 22.6 years of mining, a surface area of 3,400 km$^2$ will have been disturbed by the mining equipment. This represents 0.39 per cent of the total surface area of the mining areas reserved for the International Authority (880,000 km$^2$) and 4.75 per cent of the zone selected for preparation of the proposed plan (71,570 km$^2$). The impact will certainly have repercussions beyond the zones mined, owing to fallout of particles discharged into the water during the mining operations, and will also be significant in the water column and on the surface near the mined areas.

The impact evaluation should begin with a detailed survey of the ecological system of the site to be mined, followed by the development of an "impact hypothesis". These two items will provide information on the intensity of the impact and will provide a base of scientific knowledge. They will contribute to the establishment of regulations for the protection of the ocean environment and for the types of controls and follow-up necessary to ensure that these regulations are respected.

As a whole, the activities carried out during this training programme allowed the acquisition of knowledge regarding all the operations, methods and strategies necessary to process the mineral resources of the seabed applied to the case of polymetallic nodules.

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PREPARATORY COMMISSION FOR THE
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## INFORMATION ON THE IMPLEMENTATION OF THE TRAINING PROGRAMME FOR THE PREPARATORY COMMISSION (SUBMITTED BY THE INTEROCEANMETAL JOINT ORGANIZATION AND ITS CERTIFYING STATES)

The trainees selected by the Training Panel (LOS/PCN/BUR/R.36 of 9 February 1994), Mr. Jong-Nam Kim (Republic of Korea), Mr. Arif Hussain (Pakistan) and Mr. Ali Ibrahim Ahmed (Sudan), all in geophysics, and Mr. Alexandr Shevchyonok (Belarus), in metallurgical engineering, arrived at IOM in Szczecin (Poland) between 26 and 30 October 1994.

The first phase of the training, at IOM headquarters, was reduced to five weeks in view of the professional qualifications of the trainees and the need to extend the second phase so that they could acquire the necessary theoretical and practical knowledge in the specific areas of study.

Under the first phase, all the trainees followed a single curriculum, as provided for in the programme approved by the Preparatory Committee (LOS/PCN/TP/1993/CRP.12/Rev.1 of 26 March 1993), covering all aspects of the study and extraction of mineral resources from the world's oceans. During this phase, the trainees familiarized themselves with the activity of the marine research organizations in Poland participating in the study of the mineral resources of the world's oceans. They attended introductory and theoretical lectures by well-known scientists from the countries participating in IOM and experts of the joint organization on the following topics:

(a) Mineral resources of the world's oceans and current problems of their exploration and development, including international legal aspects;

(b) Regional geological prospecting work conducted by IOM and the other pioneer investors in the Area in the application phase, with a description of the geological and geophysical methods of the investigations and the technical equipment and apparatus used. As the most effective way of communicating the basic principles of the technology for the geological prospecting process, the trainees studied reports of IOM cruises in the area reserved for the Authority;

(c) Basic principles of the technology for processing polymetallic nodules, forecasting of the demand for the metals contained in them, non-traditional methods of utilizing nodules and general economic questions. The trainees familiarized themselves with the IOM background materials relating to all aspects of nodule-processing technology;

(d) Technological and environmental problems of the deep-sea industrial mining of polymetallic nodules. Planned mining complexes and extraction technologies. Study of the environmental safety of industrial mining of nodules and environmental field experiments.

The programme for the first phase was fully completed.

In the second phase the geophysics trainees studied from 5 December 1994 to 7 January 1995 at the Geophysics Institute in Torun (Poland), and from 9 January 1995 to 15 February 1995 at the Geology and Geophysics Institute in Sofia (Bulgaria), while the metallurgical engineering trainee studied from 1 December 1994 to 12 February 1995 in the Czech Republic, at the Institute of Mineral Raw Materials in Kutná Hóra and at the Chemical Technology Institute in Prague.

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## TRAINING PROGRAMME FOR THE INTERNATIONAL SEABED AUTHORITY AS REQUIRED OF PIONEER INVESTORS

Proposal submitted by the delegation of the Republic of Korea

1. Pursuant to paragraph 12 (a) (ii) of resolution II governing preparatory investment in pioneer activities relating to polymetallic nodules and to the understanding on the fulfilment of obligations (LOS/PCN/L.115/Rev.1, annex), the Government of the Republic of Korea is prepared to receive four trainees for a training period of approximately 10 months beginning in March 1996, in the following disciplines:

- Marine Geology (2 trainees);
- Marine Geophysics (1 trainee);
- Electronic Engineering (1 trainee).

The number of trainees in each discipline may be adjusted upon the recommendation of the Training Panel, but the total number of trainees should not exceed four. Details of the training programmes for each discipline are presented in the annex to the present proposal.

2. The training will be carried out in the following four stages:

Stage 1 (approximately 5 weeks): General orientation including a Korean language course provided by a university or institute. The training will be carried out in English, but acquisition of basic Korean language by trainees will not only help them to adapt themselves to staying in Korea but also improve the efficiency of the training;

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Stage 2 (approximately 16 weeks): Practical and theoretical training at designated institutes. In principle, the trainees in all disciplines will undertake the training programmes offered by the Korea Ocean Research and Development Institute (KORDI). During this stage, trainees may also visit the Korea Institute of Geology, Mining and Materials (KIGAM) and the Korea Mining Promotion Corporation (KMPC) to participate in training courses on selected topics. The lectures and laboratory experiments during the training will be carried out by the scientists of each institute and invited lecturers, utilizing state-of-the-art facilities of each institute;

Stage 3 (approximately 6 weeks): Practical on-board training by participating in the polymetallic nodule survey in the pioneer area. The trainees in all disciplines will board the KORDI research vessel "Onnuri" at Honolulu (or Los Angeles), and return to Honolulu (or Los Angeles);

Stage 4 (approximately 13 weeks): Continuation of the second stage of training and preparation of a report. Each trainee can select a research subject of interest based on the outcome of the training in stages 2 and 3 of the programme. Each trainee is expected to prepare a report on the training, which will be submitted to the Training Panel of the Preparatory Commission together with a full description of the training provided.

3. Qualifications of applicants. Applicants should:

- Be not more than 40 years of age;
- Be nominated by both their Government and the International Seabed Authority;
- Have a master's degree or equivalent in marine geology, marine geophysics, electronic engineering or a related field from a university or institute;
- Have more than two years' experience in the respective area of specialization;
- Have a sufficient command of spoken and written English;
- Be in good health both physically and mentally to undergo training.

4. Allowances and expenses:

- Return air tickets (economy class) between a main international airport in the trainee's or a neighbouring country and Seoul, Korea;
- Return air tickets (economy class) between Seoul and Hawaii (or Los Angeles) for on-board practical training;
- Accommodation and travel expenses necessary for the training;
- Board and per diem;
- Medical care during the training period.

## Annex

## THE TRAINING PROGRAMMES

### Profile 1

### Marine Geology

In this discipline, the trainees are expected to acquire the scientific knowledge and techniques necessary to carry out the following functions:

- Analysis and summary of geological data obtained during the survey cruises;
- Establishment and management of a geological database;
- Evaluation of polymetallic nodule resources and target area.

To achieve this end, theoretical and practical training will be offered to the trainees in the following fields:

During stage 2:

- Introduction to basic marine geology;
- Petrography, mineralogy, and geochemistry of polymetallic nodules;
- Mineralogy and geochemistry of deep-seabed sediments;
- Occurrence and genesis of polymetallic nodules;
- Sampling and analytical methods used in exploring polymetallic nodules;
- Interpretation and evaluation of sea-bottom photographs;
- Evaluation methods for the polymetallic nodule resources;
- Setting up and management of marine geology databases.

During stage 3 (on-board training):

- Planning of exploration cruise;
- Operation of equipment for sampling of polymetallic nodules;
- Operation of equipment for sampling of deep-seabed sediments;
- Operation of deep-towed underwater camera system;

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- Statistical analysis of polymetallic nodule data;
- Determination of polymetallic nodule abundance.

During stage 4:

- Integration of the geological data obtained from the exploration cruise;
- Research on the subject chosen by the trainee on the basis of the outcome of the previous stages of the training programme;
- Preparation of a training report.

Candidates are expected to have basic knowledge in marine geology, geochemistry, mineralogy, sedimentology, and personal computer operation.

## Profile 2

## Marine Geophysics

In this discipline, the trainee is expected to acquire the scientific knowledge and techniques necessary to carry out the following functions:

- Theoretical and practical understanding of various types of geophysical equipment used for polymetallic nodule exploration;
- Evaluation, selection, and operation of appropriate geophysical survey systems at different stages of exploration;
- Computer processing and comprehensive quantitative and qualitative interpretation of geophysical data.

To achieve this end, theoretical and practical training will be offered to the trainee in the following fields:

During stage 2:

- Basic introduction to marine geology and geophysics;
- Systematic methods for exploring polymetallic nodules;
- Processing and interpretation of geophysical data, such as those from the Global Positioning System (GPS) and precision-depth echo-sounding;
- Interpretation of sub-bottom profiling (SBP) data;
- Interpretation of multibeam swath echo-sounder (Seabeam 2000) data.

During stage 3 (on-board training):

- Planning of exploration cruise;
- Familiarization with positioning technique using the GPS system;
- Operation of precision-depth echo-sounder and sub-bottom profiler;
- Topographical data acquisition using multibeam swath echo-sounder (Seabeam (2000);
- Computer processing and plotting of geophysical data;
- Evaluation and interpretation of various geophysical data.

During stage 4:

- Integration of the geophysical data obtained from the exploration cruise;
- Research on the subjects chosen by the trainee based on the outcome of the previous stages of the training programme;
- Preparation of a training report.

Candidates are expected to have basic knowledge in marine geology, geophysics, acoustics and signal and data processing.

## Profile 3

## Electronic engineering

In this discipline, the trainee is expected to acquire the basic knowledge and techniques necessary to operate and maintain on-board equipment for polymetallic nodule exploration, such as the following:

- Differential global positioning and navigation system;
- Multibeam echosounder (Seabeam 2000);
- Precision-depth echo-sounder;
- Sub-bottom profiler;
- CTD (conductivity, temperature and depth) system;
- Deep-tow underwater camera system.

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To achieve this end, theoretical and practical training will be offered to the trainee in the following fields:

During stage 2:

- Programme similar to that offered in stage 2 of Profile 2, based on the qualifications of the trainee;
- Instrumentation and electronics of geophysical instruments and deep-towed underwater camera system for polymetallic nodule exploration;
- Operation and maintenance of various on-board geophysical equipment, through in-port visits to the KORDI research vessel "Onnuri".

During stage 3 (on-board training):

- Planning of exploration cruise;
- Familiarization with and operation of acoustic instruments, deep-towed underwater camera system, CTD system, and positioning system;
- Maintenance of the above equipment;
- Maintenance of the on-board data management system.

During stage 4:

- Integration of the knowledge of the electronics and techniques of geophysical instruments acquired during the training;
- Research on the instrumentation of equipment chosen by the trainee based on the outcome of the previous stages of the training programme;
- Preparation of a training report.

Candidates are expected to have basic knowledge of electrical and electronic engineering. In addition, candidates are expected to be familiar with the basics of geophysics and data processing.

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# UNITED NATIONS CONVENTION ON THE LAW OF THE SEA

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PREPARATORY COMMISSION FOR THE
INTERNATIONAL SEABED AUTHORITY
AND FOR THE INTERNATIONAL
TRIBUNAL FOR THE LAW OF THE SEA

## LETTER DATED 9 MARCH 1995 FROM THE CHAIRMAN OF THE DELEGATION OF THE RUSSIAN FEDERATION ADDRESSED TO THE SECRETARIAT OF THE UNITED NATIONS

I have the honour to transmit the documents on the results of the training of Mr. Samir Mutwally (Saudi Arabia) and Mr. Juan L. Diaz Naveas (Chile) under the programme organized by the Russian Federation and its pioneer investor - the "Yuzhmorgeologiya" state enterprise - in fulfilment of their obligations as provided for in the understanding contained in the annex to document LOS/PCN/L.87 of 30 August 1990 and approved on 31 August 1990 by the Preparatory Commission for the International Seabed Authority.

Mr. Samir Mutwally attended training in marine ecology from October 1993 to June 1994, and Mr. Juan L. Diaz Naveas attended training in marine geophysics from November 1993 to June 1994. The training took place in accordance with the programme approved by the Training Panel of the Preparatory Commission for the International Seabed Authority contained in document LOS/PCN/TP/1992/CRP.11 of 7 August 1992.

The documents transmitted herewith include:

(a) Reports on the training drafted by the trainees in English;

(b) A scientific report entitled "Geology and prospecting of manganese nodules" drawn up in English by the trainees in the course of the training;

(c) The report by the Yuzhmorgeologiya state enterprise on the fulfilment of training obligations by the pioneer investor, in Russian and English.

We accordingly consider that the Russian Federation has fulfilled its obligations with respect to training as provided for in the above-mentioned understanding contained in the annex to document LOS/PCN/L.87 of 30 August 1990, and request you to:

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(a) Inform the members of the International Seabed Authority that they may consult the above-mentioned documents;

(b) Issue to Mr. Samir Mutwally and Mr. Juan L. Diaz Naveas appropriate certificates of completion of the above-mentioned training.

(Signed) Iakov OSTROVSKI
Head of the delegation of
the Russian Federation

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